Manual for C11

List of Contents

Part I

Introduction

1   Introduction

1.1   What is C11 Codec Series

C11 Codec Series comprises the following general features:
- Transmission over variety of network interfaces
- Mixer (enhanced mixer functionality depending on model)
- Recording (depending on model)
- Playback of files (depending on model)
- Recording during Transmission (depending on model)
- Playback during Transmission (depending on model)
- FTP support for transmission of audio files (depending on model)
- E-mail support for transmission of audio files (depending on model, upcoming feature)
- FTP support for configuration export/import operations
- Dual Mode over ISDN (depending on model)
- Intercom functionality by Audio-over-IP
- Gateway functionality (upcoming feature)
- Backup functionality (upcoming feature)
- Web Remote

Generally it can be distinguished between two kinds of C11 models:

'standard models' C1130/31/35, C1140/41, C1180/81
'advanced models' C1150/51/55, C1160/61, C1190/91
The advanced models have got the following additional features:
- Slots for optional transmission interfaces (3G, POTS)
- Slots for storage media (e.g. SD Card)
- Recording & playback
- Switchable Mic/Line Inputs

C11 has an easy to use and intuitive User Interface developed in co-operation with some of our key customers. However, suggestions for possible improvements are highly appreciated. For this and any other questions referring C11 please contact info@mayah.com.

a) Transmission
C11 is based on the core technology of one of the most powerful professional audio codec CENTAURI II. Live audio or recorded audio can be transmitted and received via the following interfaces:
- Ethernet (IP transmission)
- ISDN
- POTS (optional; IP transmission; see chapter Useful Accessories)
- 3G/UMTS (optional; IP transmission; see chapter Useful Accessories)
- WLAN (optional; IP transmission; see chapter Useful Accessories)

b) Professional audio interfaces

C11 provides:
- AES/EBU audio input/output & sync
- Line inputs/outputs with 24 bit DA/AD converters
- Switchable limiter
- Switching between line and microphone input (advanced models only)
- Switchable high pass filter (advanced models only)
- Switchable attenuation of -20 dB (advanced models only)
- Switchable phantom power of 48 Volts for condenser microphones (advanced models only)

c) Recorder (depending on model)
C11 can record audio on the following media:
- Standard SD-card (see also chapter Introduction/Useful Accessories)
- Standard USB stick (see also chapter Introduction/Useful Accessories)
The audio signal can be recorded from the audio inputs and/or decoder output.
The recorded audio can be saved in following formats
- MPEG Layer 2; file format Digas Musifile; file name extension .msf
- MPEG Layer 3; file format BWF; file name extension .mp3
- Linear audio (PCM); file format: BWF; file name extension .wav
- AAC; file format RAW; file name extension .aac
- AAC (HE); file format RAW; file name extension .aac

d) Player (depending on model)
C11 can play back and hence transmit the recorded files. The audio can be monitored via the headphones and the line output (see also chapter First Start/Connectors).
e) Recording during Transmission (depending on model)
C11 can also record the transmitted audio in linear format. This enables you to protocol all your transmissions.
f) Playing during Transmission (depending on model)
C11 enables to listen to an audio file while another audio is transmitted. So you can add pre-recorded material to a live audio feed.
g) Intercom
In Intercom mode besides the main connection a 'command connection' (e.g. to call for technician) can be established additionally.
g) Gateway (upcoming feature)
Gateway mode enables the re-routing of audio received at one connection to the other, e.g. ISDN to IP.
h) Backup (upcoming feature)
Backup mode enables the failover functionality, i.e. if one connection fails C11 automatically switches to another connection, e.g. IP to ISDN.
i) Dual Mode (depending on model)
With C114x and C116x Dual Mode enables establishing of two independent ISDN mono connections.
h) Web Remote
C11 can be configured and administrated by an integrated web interface. See also chapter First Start/Useful Hints/How to start Web Remote. The functionality of this web interface is described in an additional manual. However, usually this manual is not needed since the web remote interface is self-explanatory.

1.2   Scope of Delivery

- C11
- This manual (order no. C11-UM001)
- C11 AC/DC power supply (order no. C11PSU)
  International AC/DC PSU (100-240 VAC, 50 - 60 Hz)
- Basic 19" rack mount accessories
- Other standard accessories (see packing list)

1.3   Useful Accessories

Original MAYAH C11 **accessories**
- C11 3G/UMTS card (order no. C11-3G)
- C11 WLAN card (future option; not available yet)
- C11 POTS card (order no. C11POTS)
- C11 AES/EBU DE9 to 3x XLR adapter (Order no C11C20)
- C11 USB RS232 adapter (Order no. C11C21) for ancillary data transport or remote control via terminal emulation (see also Chapter System/ Miscellaneous/Ancillary Data)

Special MAYAH C11 rack mount accessories
- Mechanical Kit to mount two ½ 19" C11xx units side by side in a 19" rack (order no. C11KIT)
- C11 RPSU - Redundant Power Supply for up to 8 C11 units (order no. C11RPSU)

Other C11 **accessories**
- SD/SDHC card (for recording; depending on model)
- PCMCIA memory card (for recording; depending on model)
- PCMCIA adapter for CF memory card (for recording; depending on model)
- USB stick or other USB-based storage device (for recording; depending on model)

Note:
- If you want to use C11 for mobile transmission you need an 3G/UMTS or a WLAN card.
- If you want to use C11 for recording you need either an SD/SDHC card, a PC memory card (e.g. Compact Flash card with PC Card adapter) or a USB storage device.

Part

II
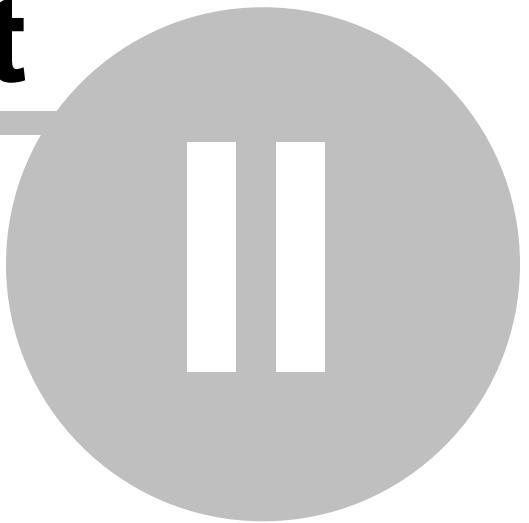
First Start

2   First Start

2.1   Before Start

- Check if scope of delivery (see chapter <u>Scope of Delivery</u>) is complete with help of the included packing list
- For later recording/playback insert either an SD/SDHC card or a USB stick or PC memory card (only advanced models)
- For later mobile transmission insert either the original C11 3G/UMTS card or the original C11 WLAN card (only advanced models)
- For later POTS-transmission insert the original C11 POTS card (only advanced models)

⚠️ ***Installation in rack***
When installing the C11 in a rack or another assembly you should make sure that the housing has the necessary air exchange and if one C11 mounted on top of the other you should have a cooling system that produces an air current to prevent heat accumulation.

Environment and Operating Conditions

Do not subject the device to damp (e.g. proximity to humidifiers etc.), heat (e.g. proximity to radiators, direct sunlight) or mechanical stress (e.g. shaking)! Make sure that the ventilation openings of the device are not obstructed when the device is in operation!

2.2   Connectors

Connectors on the front panel

Headphones: 1/4" (6.3 mm) stereo phone jack (TRS)

Connectors on the rear panel
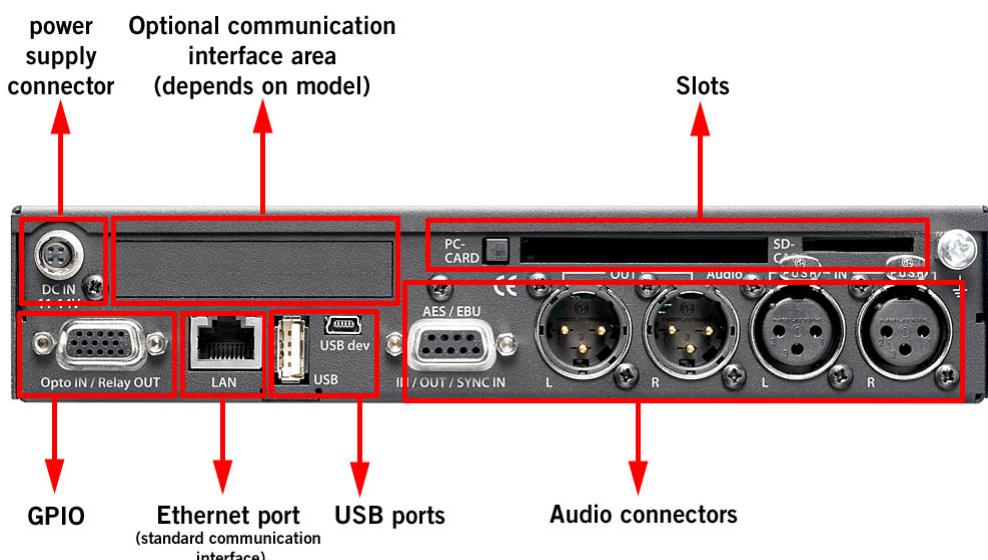
a) Audio connectors

- Analog input, 2 balanced XLR (C1130/31, C1140/41, C1150/51, C1160/61, C1180/81, C1190/91)
  Note:
  For C1150/51, C1160/61, C1180/81, C1190/91 these inputs can be switched to Microphone inputs, also with 48V phantom power if required. (See also Chapter Monitor/Setup/Audio In)

- Analog output, 2 balanced XLR
- AES/EBU In/Out/Sync In, DE9 (9 pin Sub-D) female
  (see chapter Useful Accessories for Adapter Order No. or consult the technical manuals at www.mayah.com/support/support-downloads.php for pin layout).

b) Communication interfaces

- Ethernet port (10/100 LAN)
  This interface is available in all C11 models and can be used for both audio transmission and control
- Optional communication interfaces (depending on model)

2nd Ethernet (10/100 LAN) (C1190/91)
This interface can be used for main or redundant audio streaming.

ISDN (C1140/41, C1160/61)
4x S_0 BRIs

2x ASI outs (C1180/81)

c) Slots (advanced models only)
Advanced models have got two slots.
PC card slot
In this slot the following optional cards can be inserted:
- C11 3G/UMTS card for IP-transmission via 3G/UMTS
- C11 WLAN card for IP-transmission via WLAN
- C11 POTS card for transmission via analog telephone lines
- PC Memory card (e.g. Compact Flash card with PC card adapter for recording or config. backup)

SD card slot
- for recording (recommended) or configuration backup

d) USB ports
C11 has got two USB ports.
USB A-type port
Here a USB storage device (e.g. USB stick) can be connected. It be used as storage for recording (only advanced models), as well as for emergency reset or re-configuration using a Boot Script (see Useful Hints/Boot Script) or as a recommended device for configuration backup (see also chapter System/Miscellaneous/Export Config).
USB mini port
This USB mini port is planned for future use.

e) GPIO (Opto In/Relay Out)
This general purpose interface at 15 pin D-Sub (DE15) female connector supports 4x Opto In/ 4x Relay Out and can be used e.g. for far-end switching functionality. GPIO interface is also required for remote control/monitoring of the MAYAH Redundant Power Supply C11 RPSU. Consult the technical manuals at www.mayah.com/support/support-downloads.php or contact MAYAH communications for pin layout.

f) Power supply connector
Special Hirose HR10 port for C11 AC/DC power supply or MAYAH RPSU12. Use only an original MAYAH C11 power supply. MAYAH is not liable for damages caused by none-MAYAH equipment.

2.3   LEDs
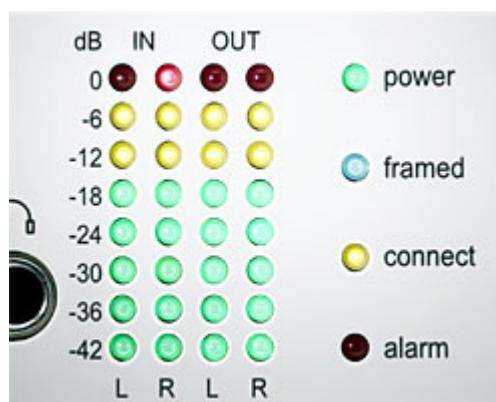
LEDs: all models except C1135, C1155   **LEDs: C1135, C1155**

Level LEDs
Scale between 0 dBFs and -42 dBFs

a) Audio In (all models except C1135, C1155)

b) Audio Out (all models)

Status LEDs

a) Power

b) Framed
Valid audio data is received and being decoded.

c) Connect
At all communications interfaces except ISDN this means 'audio data is being sent out'.
At ISDN this means 'ISDN connection is established'.

d) Alarm

Alarm lights up if one of System Health parameters is out of tolerance range.
Following parameters are being checked:

- Voltages
- Temperatures

2.4 Buttons

Only following models have got display and buttons on the front panel:

- C1131, C1141, C1151, C1161, C1181, C1191

Generally the buttons can be divided in three groups:

- Function buttons (F1-F4)
- Cursor buttons/OK button
- Alphanumeric keypad

Function buttons

**Cursor buttons
OK button**

Numeric keypad
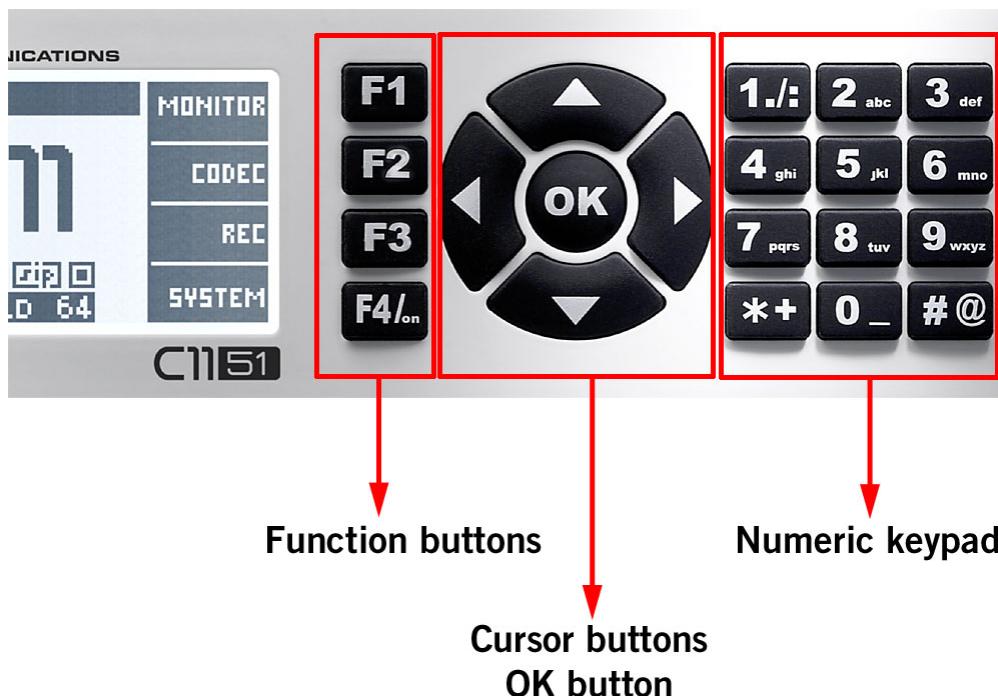
a) Function buttons

The buttons F1 - F4 have got a context sensitive meaning i.e. in different
situations different functionalities are assigned. Which functionality is currently
assigned is displayed on the LCD display.

Usually the buttons F1 - F3 are used to enter the referring sub menu items.
The button F4 has got only 3 functions:

- Press F4 for approximately 2 seconds to switch on C11 or to enter the switch off dialog.
- In the main screen press F4 to enter System menu
- In any other screen press F4 to escape to upper level in menu structure or to close current dialog

b) Cursor buttons/OK button

The cursor buttons enable all navigations through the menus.
With the OK button the user steps in entry fields (e.g to type in an IP address) and confirms the complete entry.

Backspace functionality (delete character/text)

Holding the ◀ button pressed for approx. 2 seconds changes to delete mode. First character is deleted after approx. 0.5 seconds but the delete speed is increased by 10% for each further character.

c) Alphanumeric keypad
With the numeric keypad you can enter names, phone numbers or IP addresses. The input is similar to mobile phones. Just press a key until the needed character is shown:
Assigned key 1: 1 . : /
Assigned key 2: 2 A a B b C c
Assigned key 3: 3 D d E e F f
Assigned key 4: 4 G g H h I i
Assigned key 5: 5 J j K k L l
Assigned key 6: 6 M m N n O o
Assigned key 7: 7 P p Q q R r S s
Assigned key 8: 8 T t U u V v
Assigned key 9: 9 W w X x Y y Z z
Assigned key 0: 0 <SPACE>
Assigned key *: * + -_
Assigned key #: # @
Note:
Which characters really can be entered depends on the menu item (context sensitive).

2.5   Graphic User Interface

a) Menu area (right side of the screen)
In the menu area the meaning of the context sensitive function buttons is displayed.
Note:
Usually the F4 button is used as an 'ESC' button except:
- at start screen the F4 button will open System menu
- holding the F4 button for approx. 2 seconds will open 'Switch Off' dialog

b) ESC
'ESC' means to step back to the next upper level of the menu structure or to close current dialog.

c) Scrollbars
The scroll bar on right side indicates the position in the referring list. An empty scroll bar means that the whole list is shown on the screen. Scrolling is done by pressing and holding cursor buttons ▲ and ▼.

d) Navigation within screens

Elements inside of the screen can be reached by pressing the cursor buttons. Direction of the cursor buttons corresponds to the navigation direction on screen.

e) Backspace functionality (delete character/text)

Holding the ◀ button pressed for approx. 2 seconds changes to delete mode. First character is deleted after approx. 0.5 seconds but the delete speed is increased for 10% for each further character.

2.6   Switching On and Off

> ⚠ *The models without front panel controls are switched on automatically as soon as power supply is available.*

For models with front panel controls:

a) Soft switching on/off

Press and hold the F4 button for approx. 2 seconds to switch on C11. To prevent accidental switch off this must be done either

- via front panel menu item System/Switch off
- or by holding the F4 button for approx. 2 seconds to open the 'Switch Off' dialog

b) Hard switching on/off

Usually this means connecting or removing power supply e.g. plug or unplug power supply connector. However, hard switching off can be also done by holding the following key combinations for approx. 4 seconds: cursor button ▼ and '0'.

Note:

C11 'remembers' the last power state i.e. if C11 has been turned off by removing power supply it starts up automatically as soon as power supply is back.

2.7   Useful Hints

2.7.1   Default IP settings

a) By default every C11 has got the following IP settings:
- DHCP: off
- Address: 10.0.0.10
- Netmask: 255.255.255.0
- Gateway: 255.255.255.255
- DNS Server: 255.255.255.255

Advanced Dual IP Audio Codec C1190/901 has got two Ethernet cards with different default settings.
- LAN1 (the upper one, by default only used for audio streaming)

- DHCP: off
- Address: 10.0.1.10
- Netmask: 255.255.255.0
- Gateway: 255.255.255.255
- DNS Server: 255.255.255.255
- LAN (the bottom one, by default only used for remote control)
  - DHCP: off
  - Address: 10.0.0.10
  - Netmask: 255.255.255.0
  - Gateway: 255.255.255.255
  - DNS Server: 255.255.255.255

Note:
If IP-address 255.255.255.255 is entered, it means that the service or address is not in use.

Note 2:
If you want to control your C11 in your LAN it must be located in the same subnet as your PC i.e. when the digits of your binary net mask are '1' the referring digits of the IP address of your C11 and your PC must be the same.
Example:
Net mask: 255.255.255.0 = 11111111 11111111 11111111 00000000
PC IP address: 192.168.1.56
C11 with IP address: 192.168.1.57 is located in the same subnet, but 192.168.100.57 is not.

b) Default IP ports

Necessary IP ports for successful Audio-over-IP connections:
- 5004 (Audio transmission, RTP)
- 5005 (Network information, RTCP)
- 5060 (SIP)

Some other IP ports used by MAYAH devices:
- 20 and 21 (FTP Data and control)
- 23 (Telnet remote control)
- 80 (HTTP for web-remote)
- 123 (NTP)
- 161 (SNMP control)
- 162 (SNMP traps)
- 5006 (FEC Redundant Data, columns)
- 5008 (FEC Redundant Data, rows)
- 2060 (Audio level information for remote control software)
- 2061 (UDP scan)

Full list of the IP ports can be found in the Communication Reference Manual at
www.mayah.com

2.7.2 How to access C11 via FTP

Each MAYAH unit provides an integrated FTP and Web server, so you can access them as soon as the device is reachable via IP and the IP address is known.

⚠️ *FTP access should be performed only by an experienced user*

a) Access C11 system files

FTP access data for C11 are by default:
- Host: <IP addres of C11>
- Username: Admin
- Password: Power

b) Access storage devices attached to C11

To access SD Card or USB stick inserted into C11 just add an appropriate 'path' to the access data:
- D: (SD Card); E: (PC card); F: (USB storage)

2.7.3 How to start Web Remote

To use the Web Remote Java 6 support is required and Java 6 applets must be available within the web-browser. The Web Remote access data are by default:
- Host: <IP address of C11>
- Username: WebAdmin
- Password: WebPower

Additional password protection is used for the Web Remote area 'SPECIAL' where experienced user can Update the C11, activate optional algorithms, change various access passwords etc.

The password for 'SPECIAL' area is by default:
- 'a' (single character)

2.7.4 How to update C11 firmware

In some cases it can be necessary to update your C11. It can be done using the Web Remote Interface or directly using FTP. The update process should not be interrupted, otherwise the unit can be damaged.

The firmware update is provided by MAYAH as a single file with the file name extension '.upd'. This file must be get ready on your computer before update.

a) Update with the Web Remote Interface

- Start Web Remote Interface in a browser
- Go to the 'SPECIAL' button

- Choose Update and load the file
- C11 will reboot itself upon completion of upload and update itself automatically.
- To continue device control with the Web Remote the browser tab or window must be restarted as well

b) Update by using FTP

- With a standard FTP client software access C11 using the credentials given in the chapter 'How to access C11 via FTP
- Put the '.upd' File to the root directory of the unit ('/user/'), ensure that the file has been transferred entirely and restart (switch off and on) the C11.

⚠️ *Update process description / Precautions during update*

1. *Upload.* *It takes about 4 minutes to upload the '.upd' file to C11. After this a reboot is required. If you are using the Web Remote, reboot command will be issued automatically.*
2. *Installation.* *The new firmware is installed automatically. The progress is shown by the text messages at the LCD screen and/ or blinking of LEDs. After this step is completed successfully another reboot will occur automatically.*
3. *First start of the new firmware.* *At this point some further update processes might occur without notice. These processes must not be interrupted. On C11 models without LCD screen please allow at least 1 minute of normal operation (green LED is on and not blinking) after the update. DO NOT SWITCH THE C11 OFF.*
4. *Update finished.* *To make sure that all update processes are completed on C11 without LCD screen, please ensure that the unit is reachable via network. On units with LCD screen it is enough to wait until the Start Screen is displayed.*

2.7.5   How to activate Keycodes

Keycodes are used to activate optional algorithms (see also Codec/Setup/Quality) and functions of C11. Keycodes are provided by MAYAH Communications.

Keycodes can be set for each particular device by using Web-Remote (menu item SPECIAL/Keycodes).

Alternatively keycodes can be entered with the direct command 'sys_keycode <keycode>' by using Telnet session, boot script (see below) or any other control type.

2.7.6   How to reset C11

This operation should only be done by expert users. MAYAH is not responsible for any possible risks or configuration losses in case of misuse of this function.

Upon factory reset the entire configuration of the device will be set back to the factory default values. Codec quality profiles, phone book entries and all presets created by device users will be deleted!

There are three ways to bring the C11 back to the factory defaults

a) For C11 models with the front panel controls it is possible to do in the menu SYSTEM/MISC/Factory Default.

b) For all models it is possible to do by establishing a telnet session to the C11 or by using a telnet console in the SPECIAL area of the integrated web-remote and typing the direct command 'sys_reset factory'.

c) For all models it is possible to include the direct command 'sys_reset factory' in the Boot Script file and apply the boot script as described in the next chapter of this manual.

2.7.7   Boot Script

This feature should only be used by expert users for emergency situations e.g. helpful emergency USB stick created by service staff to support non technical colleagues.

This configuration method can be particularly useful for all C11 models without front panel controls in case that access data have been lost or device has become unreachable via IP.

A file named 'mayah-command-scripts.txt' can be used as a boot script if it is located in the root folder of a USB stick. A boot script can contain a set of any direct commands (one command per line). Such direct commands are described in the Communication Reference Manual. Please contact MAYAH for more information on this.

Just insert the USB stick and start device. All the direct commands will be executed after booting.

Example **mayah-command-scripts.txt**

ip_address 192.168.1.57
ip_netmask 255.255.255.0

Description: This simple boot script sets the IP address of C11 to '192.168.1.57' and the net mask to '255.255.255.0'.

Part

III
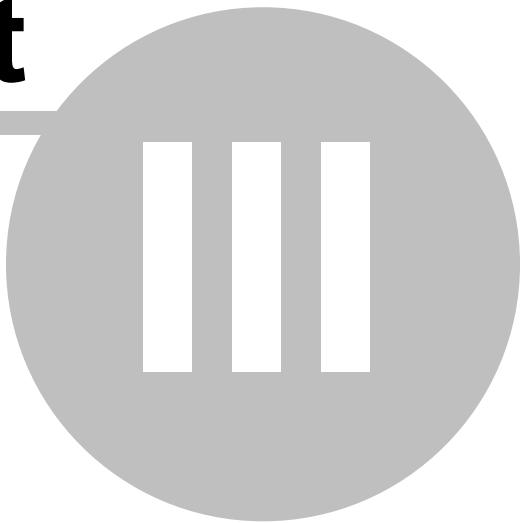
Front panel user interface

3 Front panel user interface

Front panel user interface is only available for the following C11 models:
- C1131
- C1141
- C1151
- C1161
- C1181
- C1191

⚠ *Models without front panel user interface can be controlled via the integrated **Web Remote** interface. See also Useful Hints/How to start Web Remote*

After C11 is booted up the main startup screen is shown.

In this screen (main screen) the user can select following functionalities of C11 with the function keys F1, F2 and F3:
- Monitor menu (F1)
- Codec (F2)
- Play/record menu (F3) (advanced models only; see technical specification)

Furthermore the System settings can be configured by pressing the F4 function key. In sub menu item of System settings the C11 can be switched off.

For more information about the status elements consult chapter Front panel user interface/Monitor,

3.1 Monitor

The Monitor menu supports the following:
- Set audio source and volume for headphone output
- Gain adjustment and mixer matrix
- Configuration of audio inputs 1 and 2,
- choosing a Mixer Mode
- AES/EBU settings

Sub menu items are:
- HPHONE (F3)
- MIXER (F2)
- SETUP (F3)
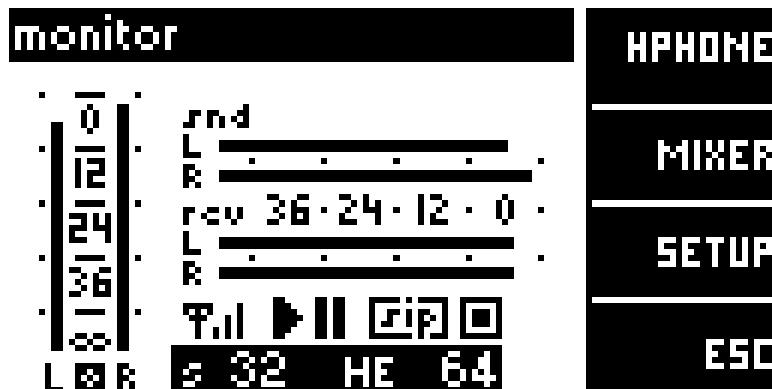
Elements of the monitor screen

Level Meters

a) Vertical Level Meters
- display the audio input levels (1 and 2)
b) Horizontal Level Meters
Upper levels display Send Level (Left/Right; transmit level to the connection partner)
Bottom levels display Receive Level (Left/Right; receive level from the connection partner)

Status displays

a) Coding settings
For instance
s 32 HE 64:
- stereo (operational mode)
- 32 kHz (sample rate)
- AAC (HE) (algorithm; coding format)
- 64 kbps (bit rate)

b) Signal strength (3G/UMTS) (depending on model)

T.ıl Best

T.ı Good

T. Sufficient

T Bad

Blinking symbol means 'no 3G/UMTS connectivity'.

c) Recorder / Player state indicator: e.g. ▶ ❚❚ **(Playback / Pause); (depending on model)**

d) SIP registration symbol: ⬚⬚

e) Framing state indicator:

▣ framed (sending and receiving audio)

◻ not framed but connected (e.g. sending but not receiving at unidirectional IP connection)

▪ receiving only (e.g. at unidirectional IP connection)

Blinking of the framing state indicator means that C11 is currently connecting (connection in progress).

3.1.1 Headphones

Here the audio source and the volume for the headphone output on the front panel can be set.

```
headphone|setup              HPHONE

▬▬▬▬▬▬▬▬▬▬▌  100%         MIXER

◉ Analog-Out                 SETUP
◯ Analog-In
◯ Digital-In                 ESC
```
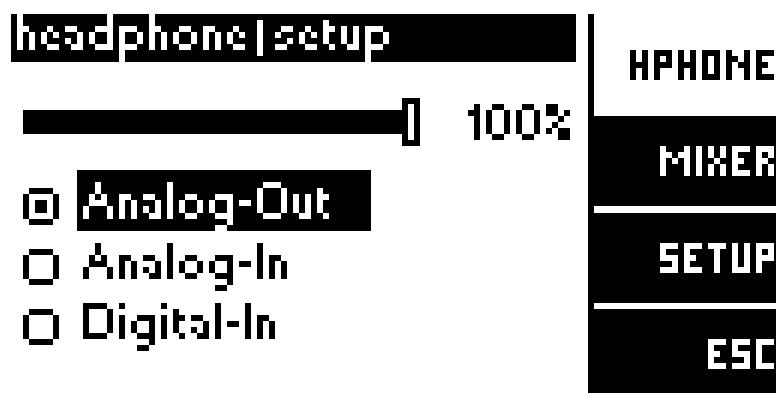
Note:
Headphones volume by factory default is '0'. Adjust it to a desired value to monitor the audio at the headphone output.

3.1.2 Mixer

The Mixer menu supports the following features:
- Gain adjustment for audio inputs
- Mixer matrix
- Loading of 8 user mixer profiles
- Loading of 8 factory mixer profiles

How mixer levels are adjusted is determined in the mixer mode at menu item Monitor/Setup.

3.1.2.1 Structure of dialog and navigation

All mixer screens consist of 2 operational fields:

- mixer menu (left side) with the entries:
  - mem
  - gain
  - out
  - rec (depending on model)
  - send

- level rotary knobs
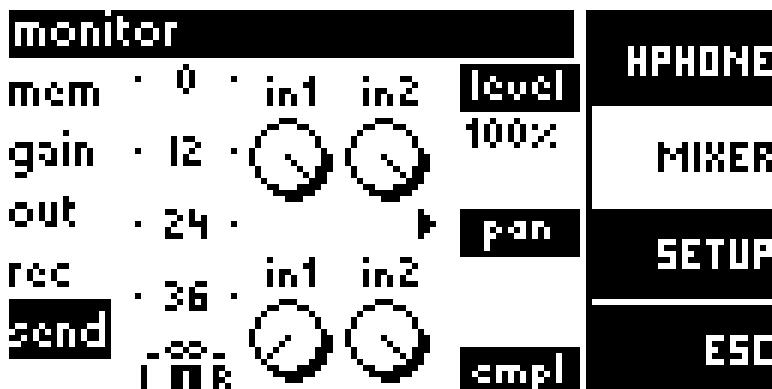
Change between the operational fields is possible with the OK button.

In the mixer menu area the navigation is possible by the ▲ and ▼ cursor buttons.

In the rotary knobs' field adjustable levels and pannings can be selected with the ◀ and ▶ cursor buttons. The currently adjustable level or panning is underlined. With the ▲ and ▼ cursor buttons the level and panning adjustment can be done.

The panning or level state of the currently **underlined** control is shown on the right side as a percentage.

3.1.2.2 Mixer profiles

When menu bar item 'mem' is selected it can be changed between factory profiles and user profiles with the function keys F1 and F2. At this item 8 user profiles and 8 factory profiles can be loaded, edited or deleted.
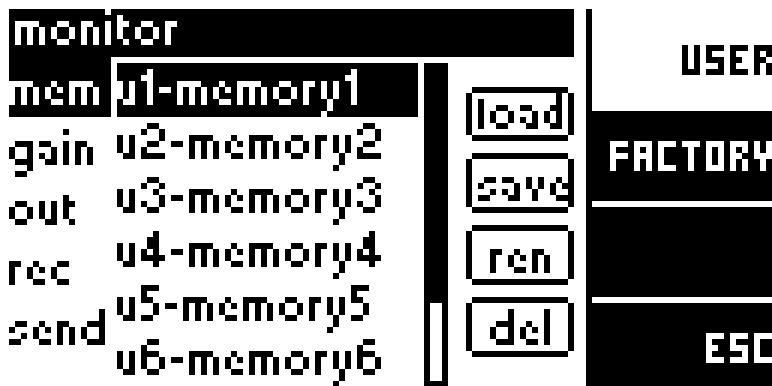
Note:

Escape to the main Mixer menu can be done by pressing F4 button.

If certain Enhanced Application mode is activated on the C11, a new menu item 'SKINS' can appear under Mixer Profiles. Profiles at this item should only be modified by an advanced user. Please read the Skins Profiles chapter for more information.
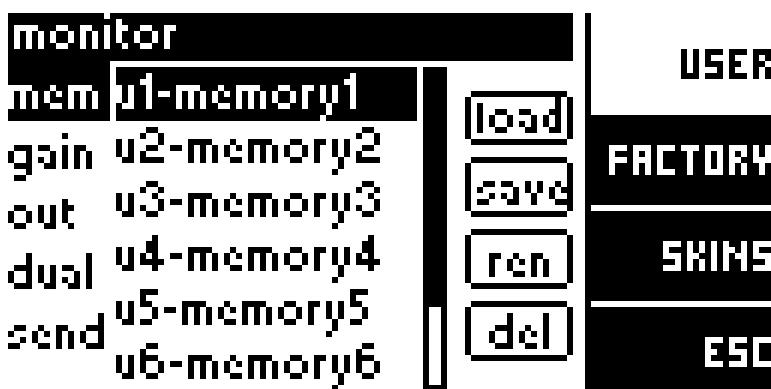

3.1.2.2.1 User profiles

Meaning of the Memory buttons for User profiles:

Load

Selected mixer profile becomes active

Save

Current mixer settings are saved in the currently selected mixer profile

Edit

Here the currently selected mixer profile can be renamed

Del

Clears all the settings in the currently selected mixer profile (i.e. loading such a profile has no effect)

3.1.2.2.2 Factory profiles

With the current firmware version 4 factory mixer profiles are provided:

- REC RCV (typical classic codec operation; default)

At the audio outputs the received audio from the remote side is available.
If recorder functionality is available then the received audio can be recorded.
All input audio (i.e. physical audio inputs and played files) is sent to the remote side.

- REC IN (typical classic codec operation but local audio can be recorded)

At the audio outputs the received audio from the remote side is available.
If recorder functionality is available then the local audio can be recorded.
All input audio (i.e. physical audio inputs and played files) is sent to the remote side.

- MONO L (live transmission of left audio channel)
At the left audio output the left channel of the received audio from the remote side is available. If recorder functionality is available both channels of a played file are available at the left output. The audio at the left input channel and both channels of a played file are sent to the left channel of the remote side. If recorder functionality is available the left channel of the received audio can be recorded in the mono mode.

- Log PAN (logging of local and received audio)
Same as mixer profile REC RCV except recording.
At recording the local audio (both channels) is recorded on left channel and the received audio (both channels) is recorded on right channel.

Note:
Factory mixer profiles cannot be modified, therefore only one button 'Load' is available.

3.1.2.2.3 Skin profiles

Skin profiles for C11 are only applied to particular Enhanced Application modes, e.g. to Dual Mode or Intercom. They are loaded automatically when one of the corresponding Enhanced Application modes is activated. See also chapter Codec/Setup/Enhanced Applications.

At this menu item such profiles can be loaded manually or saved in case of manual modification for advanced audio routing scenarios.

Experienced user can modify the audio levels at the Mixer and update (save) an appropriate Skin profile to use those settings each time when the corresponding Enhanced Application mode is active.

Meaning of the Memory buttons for Skin profiles:

Load
Selected mixer profile becomes active
Save
Current mixer settings are saved in the selected mixer profile

Note:
Only one Mixer Profile can be associated with each Enhanced Application mode.

3.1.2.3   Gain

Here the gain of the analog audio inputs can be set.
Depending on inputs configuration following Gain range can be used (see also Chapter Monitor/Setup/Audio In)
- Input L & R as line inputs: 0 dBu to 18 dBu
- Input L & R as mic inputs: -56.3 dBu to 35.3 dBu (only advanced models)
- Input L & R as mic+ inputs: -10 dBu to 0 dBu (only advanced models)

3.1.2.4 Mixer matrix
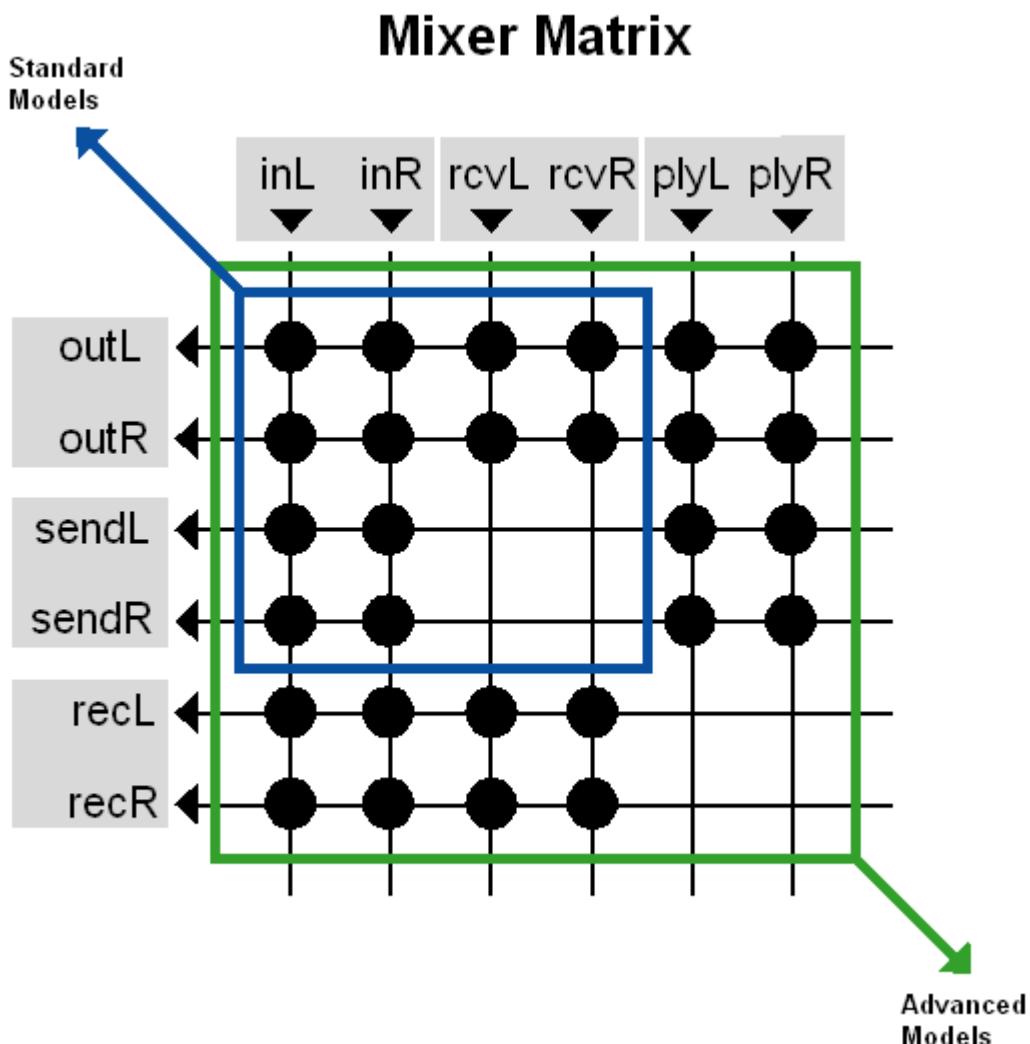
Out
The level and the panning state of all possible inputs at line output and/or digital output can be set.
Levels are shown in the upper row whereas panning's are shown in the bottom row.
Possible inputs for Out are:
- Audio inputs
- Decoder level (left and right)
  Decoder level is the level of received audio from the remote side of connection.
- Playback level (left and right)
  This is the level of played files.

Rec (advanced models)
The level and the panning state of all possible inputs for recorded audio can be set.
Levels are shown in the upper row whereas panning's are shown in the bottom row.

Possible inputs for Recording are:
- Audio inputs
- Decoder level (left and right)
  Decoder level is the level of received audio from the remote side of connection.

Send
The level and the panning state of all possible inputs for transmitted audio can be set.
Levels are shown in the upper row whereas panning's are shown in the bottom row.
Possible inputs for Send are:
- Audio inputs
- Playback level (left and right)
  This is the level of played files

Note:
When any of the Enhanced Application modes are activated, the Rec & Play captions are renamed according to the application type. E.g. "PlyL / PlyR" in the Dual Mode are titled "dmL / dmR". See also chapter Codec/Setup/Enhanced Applications.

3.1.3 Setup

Here the following can be set:
- Audio input mode
- Mixer Mode
- AES/EBU configuration

3.1.3.1 Audio In

Here the audio inputs 1 & 2 (left & right) can be configured separately. The selection of audio input is done by the ◀ and ▶ cursor keys.

Choice between audio inputs
Press OK button to open the dropdown menu with audio input options:

a) line (analog, line level)
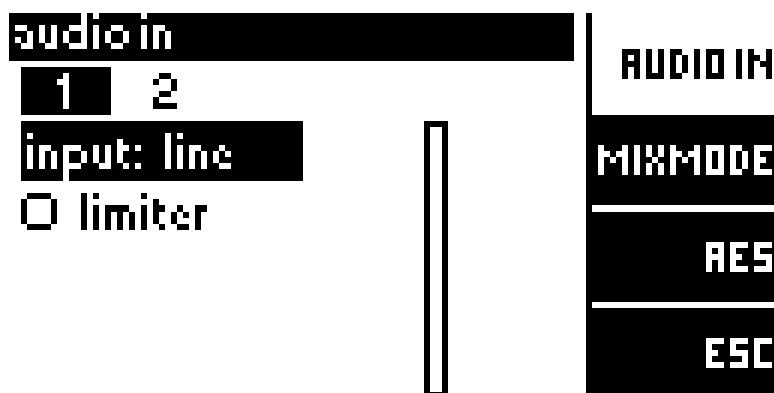
```
audio in          |  AUDIO IN
 1    2           |
input: line       |  MIXMODE
 ☐ limiter        |
                  |  AES
                  |
                  |  ESC
```

- **Limiter**
  The limiter guarantees that too high audio input levels are not just cut off (which caused big distortions) but softly clipped.

b) aes (digital, AES/EBU)
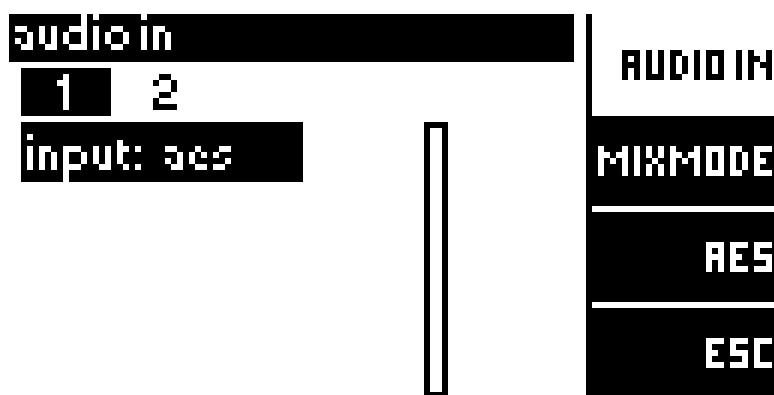
```
audio in          |  AUDIO IN
 1    2           |
input: aes        |  MIXMODE
                  |
                  |  AES
                  |
                  |  ESC
```

c) mic (analog, mic level) (advanced models only)

```
audio in          |  AUDIO IN
 1    2           |
input: mic        |  MIXMODE
 ☒ limiter        |
 ☐ HP filter      |  AES
 ☐ 48 V           |
 ☐ -20dB          |  ESC
```

- **Limiter**
  The limiter guarantees that too high audio input levels are not just cut off (which caused big distortions) but softly clipped.

- **HP filter**
  Just available for microphone input
  This feature prevents that low frequencies at audio input damages audio equipment.
- **48 V**
  Just available for microphone input
  48 V phantom power enables to use C11 with condenser microphones
- **- 20 dB**
  Just available for microphone input
  This feature enables the attenuate audio input by 20 dB.

d) mic+ (analog, mic+ level) (advanced models only)
Mic+ is made for high microphone levels (e.g. very loud neighbourhood in football stadiums) or microphones with very high output voltages.

```
audio in            AUDIO IN
  1    2
input: mic+         MIXMODE
◉ limiter
○ HP filter         AES
○ 48 V
                    ESC
```

- **Limiter**
  The limiter guarantees that too high audio input levels are not just cut off (which caused big distortions) but softly clipped.
- **HP filter**
  Just available for microphone input
  This feature prevents that low frequencies at audio input damages audio equipment.
- **48 V**
  Just available for microphone input
  48 V phantom power enables to use C11 with condenser microphones.

Note:
- At line input the audio signal is attenuated before it's routed to an A/D converter. Therefore Gain (see Monitor/Mixer) can be set between 18 dBu (left position) and 0 dBu (right position).
- At microphone input the audio signal is amplified by a pre-amp. Afterwards the signal is attenuated before it's routed to an A/D converter. Gain (see Monitor/Mixer) can be set approx. between -35.3 dBu (left position) and -56.3 dBu (right position).
- Generally the mic+ input signal is treated similarly as line input signal (i.e. no pre-amp). In opposite to line input the audio signal is amplified before it's routed to an A/D converter. Therefore Gain (see Monitor/Mixer) can be set between -10 dBu (left position) and 0 dBu (right position).

3.1.3.2   Mix Mode

Here can be set if **mono mix** or channel swap should be performed automatically during active **mono connections** or **mono recordings**.

> *Mix Mode functionality is dependent on Mixer settings! If mixing parameters have been changed the automatic Mono Mix may not function properly. Default mixing parameters can be restored by using the first Factory mixer profile ("REC RECV"). See also Chapter Monitor/Mixer/Mixer profiles.*

a) SEND

* default: with the current firmware version =left
* mix: (Left+Right) -6 dB input signal is transmitted to connection partner
* left: only the signal from the left audio input is transmitted to connection partner
* right: only the signal from the right audio input is transmitted to connection partner

b) RECV

* default: with the current firmware version =left
* mix: received mono signal is provided to both left & right audio outputs
* left: received mono signal is provided to the left audio output
* right: received mono signal is provided to the right output

c) REC (only advanced models)
if mono format (e.g. Linear 16bit Mono) is chosen for recording the following settings can be used

* default: with the current firmware version =left
* mix: (Left+Right) -6 dB input signal is used for recording
* left: only the signal from the left audio input is recorded
* right: only the signal from the right audio input is recorded

Note:
This parameter is not applicable when audio routing settings in the menu Monitor/ Mixer are set to defaults, since no audio from the audio inputs is provided to recorder by default. If you like to record the audio from the inputs of the C11 instead of the received signal, you may like to activate the second Factory mixer profile ("REC IN") in the menu Monitor/Mixer/Mixer profiles.

d) PLAY (only advanced models)

* default: with the current firmware version =left
* mix: playback of mono file is provided to both left & right audio outputs
* left: playback of mono file is provided to the left audio output
* right: playback of mono file is provided to the right audio output

3.1.3.3   AES

Here AES/EBU interface behavior in some special cases can be specified (in most cases it must not be changed).

a) AES Out Sync

- **Clock (default):** AES/EBU output is clocked internally
- **AESSync:** AES/EBU output is clocked according to AES Sync In signal

b) AES Master
This item activates or deactivates the AES Master mode.
- **On (default):** C11 acts as the clock generator for AES audio interface
- **Off:** digital audio will be clocked via the AES/EBU input if clock is supplied at this interface

c) All SRC's

- **On (default):** Internal sample rate converters run as usually. This setting is required for normal operation of the C11
- **Off:** Disables all internal sample rate converters of C11

d) AES/EBU out prof

- **On:** Professional Mode is activated
- **Off (default):** Professional Mode is deactivated

3.2 Codec/Transmission

The codec/transmission menu supports the following:
- Establishing/terminating connections
- Configuration of all communication interfaces and codec settings (except audio inputs and levels)

Sub menu items when no connections are established:
- Connect menu (F1)
- Status menu (F2)
- Setup menu (F3)

Sub menu items when a connection is established:
- End Call (F1)
- Status menu (F2)
- Setup menu (F3)

3.2.1 Connect menu

In the connect menu all kinds of transmissions can be established by:
- Last connections (F1)
- Phone book entries (F2)
- Direct dial (F3)

The first screen shown is "Last Connections".

3.2.1.1 Last connections

Here the last 10 connections established **from** this C11 are stored. Select one with the cursor keys and establish the referring connection with "dial".

```
codec|connect            LAST
L3Stereo[U]
rtp://192.168.1.111   PHONEB.
rtp://192.168.1.64
rtp://192.168.1.82    DIRECT
sip:192.168.1.70
rtp://192.168.1.222   ESC
                 dial
```
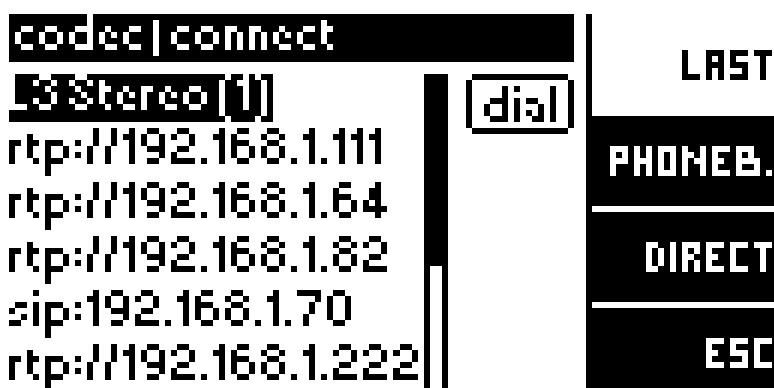
Note:

If there is a phone book entry was used then the transmission will be established with the exact parameters of the phone book entry. If the previous connection was established directly then the repeating connection will be established over the same network and with the current codec quality settings.

3.2.1.2 Phone book menu

At the phone book screen up to 256 predefined phone book entries can be:
- Dialed
- Edited (expert mode only)
- Newly created (expert mode only)
- Deleted (expert mode only)

```
codec|connect            LAST
Studio Hamburg s  dial
OB Van12 m G.72:       PHONEB.
Studio Berlin st A edit
Studio New York    new DIRECT
Studio Hamburg m
Studio Hamburg m   del ESC
```
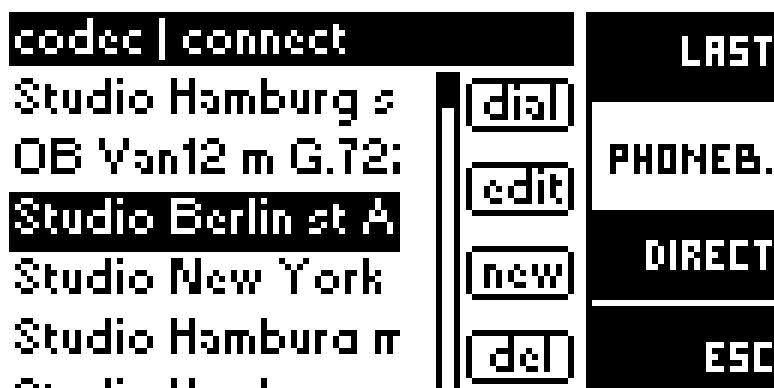
When a phone book entry is edited or newly created then the following parameters can be set:
- Name (max. 256 chars; 8 chars recommended)
- Settings (optional parameter, usually 'unused')
  Note:
  Settings are configurations as described in menu item System/Configurations
- Communication Interface (Ethernet, ISDN, 3G/UMTS, POTS or WLAN)
- Encoder / Decoder profiles (codec settings)

- Direction (just for IP-based connections, e.g. Ethernet or 3G)
  - sendrecv (bi-directional)
  - send
  - receive
- Destination: phone/ISDN number(s) or IP/SIP addresses
  Note:
  SIP addresses must be preceded by 'sip:' (e.g. 'sip:1007')
  Note 2:
  To send or receive a multicast stream just enter the multicast address here. Multicast connection usually cannot be a bi-directional one. Multicasting principles are explained in the MAYAH Application Note 9 (Part 1 & 2)

> ⚠ *If an existing phone book entry is edited or a new one is created it should be considered that some communication interfaces do not support all bit rates e.g. the bit rates of linear transmissions are too high for ISDN.*

3.2.1.3 Direct Dial menu

The contents of the direct dial screen is context sensitive and depends on the selected communication interface.

The communication interface can be set to:
- Ethernet
- ISDN (C1140/41, C1160/61 only)
- 3G/UMTS (advanced models; optional)
- POTS (advanced models; optional)
- WLAN (advanced models; optional)
- ASI (C1180/81 only)

a) Ethernet
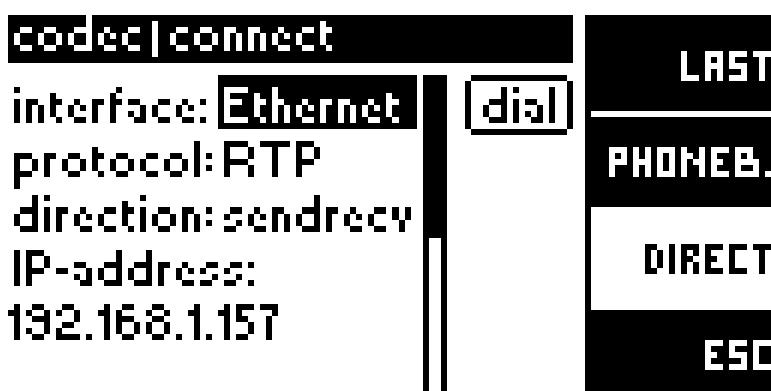
- **protocol**
  here IP protocol can be set to:
  - RTP
  - SIP

- **direction**
  here connection type can be set to:
  - sendrecv (bi-directional connection)
  - send (C11 acts as encoder)
  - recv ('receive', C11 acts as decoder)
- **IP-address/SIP-address**
  At IP address the destination address can be entered. At SIP protocol also alphanumeric SIP addresses are possible.
  Note:
  To send or receive a multicast stream just enter the multicast address here. Multicast connection usually cannot be a bi-directional one. Multicasting principles are explained in the MAYAH Application Note 9 (Part 1 & 2)

b) ISDN (C1140/41, C1160/61)

```
codec|connect

interface: ISDN       dial        LAST
number 1:
0811551762                        PHONEB.
number2:
                                  DIRECT

                                  ESC
```
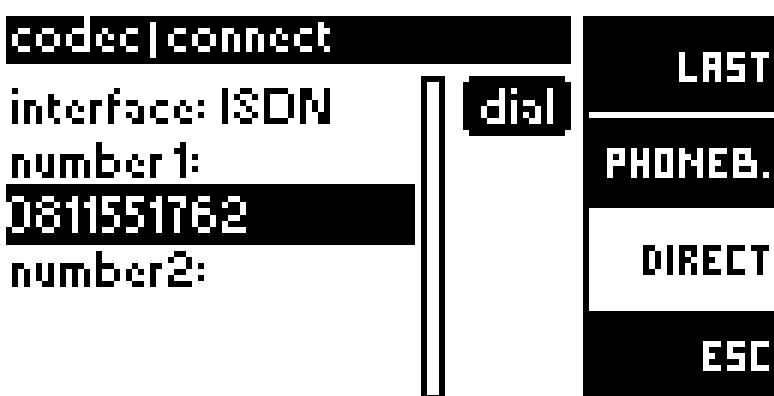
Numbers can be entered for B-channels 1 to 8.

c) 3G/UMTS (advanced models only)
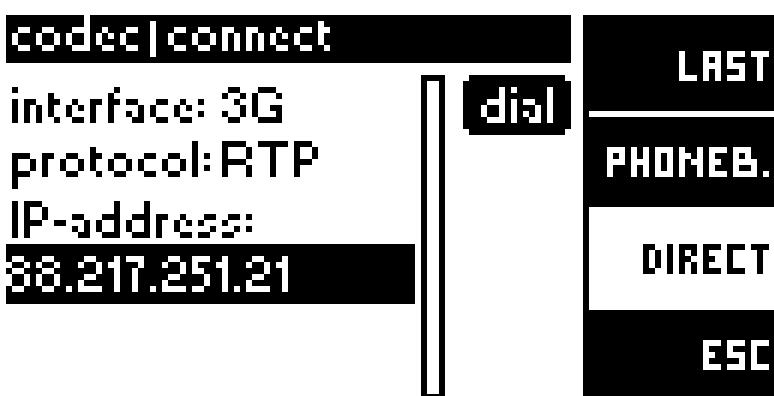
```
codec|connect

interface: 3G         dial        LAST
protocol:RTP
IP-address:                       PHONEB.
88.217.251.21
                                  DIRECT

                                  ESC
```

- **protocol**
  here IP protocol can be set to:
 - RTP
  - SIP
- **direction**
  here connection type can be set to:

      - sendrecv (bi-directional connection)
      - send (C11 acts as encoder)
      - recv ('receive', C11 acts as decoder)

- **IP-address/SIP-address**
  At IP address the destination address can be entered. At SIP protocol also alphanumeric SIP addresses are possible.

Note:
A 3G/UMTS connection establishes an IP connections same as connection via Ethernet just using other hardware and providers.

d) POTS (advanced models only)

```
codec|connect

interface: POTS        dial        LAST
number:
351798                             PHONEB.

                                   DIRECT

                                   ESC
```
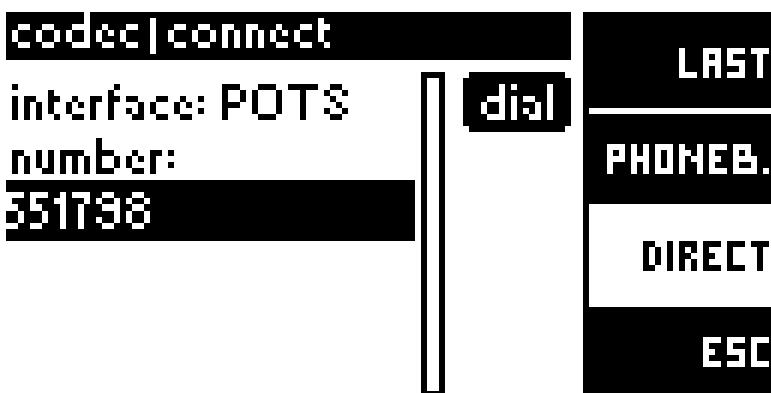
At number the phone number of the other side codec can be entered.

e) WLAN (advanced models only, future option)

- **protocol**
  here IP protocol can be set to:
  - RTP
  - SIP
- **direction**
  here connection type can be set to:
  - sendrecv (bi-directional connection)
  - send (C11 acts as encoder)
  - recv ('receive', C11 acts as decoder)
- **IP-address/SIP-address**
  At IP address the destination address can be entered. At SIP protocol also alphanumeric SIP addresses are possible.

Note:
A WLAN connection establishes an IP connections same as connection via Ethernet just using other hardware and/or providers.

"Dial" establishes the transmission.

3.2.2   Status menu

The first screen shown is "Interface".

3.2.2.1   Interface status

The contents of this screen depend on the last used interface or interface currently in use.

The top line shows the interface and remains on screen all the time.

The information area below can be scrolled up and down using the cursor buttons ▲ ▼ .

a) Ethernet

```
codec | status        INTERF.
current interface:Ethernet
current protocol:    CODING
  RTP
connection time :
  22:48:30             ESC
```

- current protocol: SIP, RTP
- connection time (if not connected 0)
- connection quality (best, good, sufficient, bad)
- local IP-address
- remote IP-addr.: IP- or SIP-address of connection partner
- input bit rate in kbps
- output bit rate in kbps
- jitter in ms
- lost packets
  These are packets lost during transmission and cannot be recovered
- dropped packets
  These are packets received in a wrong sequence order. Since delay buffer is not big enough these packets cannot be reordered and therefore they're dropped. This can be improved by setting a higher delay buffer (see Codec/Setup/Interface/Ethernet) and/or by activation of the AJC (see System/Misc/AJC)

b) ISDN (C1140/41, C1160/61)

```
codec|status
current interface:ISDN
current protocol:
DSS1
connection time :
    0:00:00
number1:
```
```
INTERF.

CODING

ESC
```
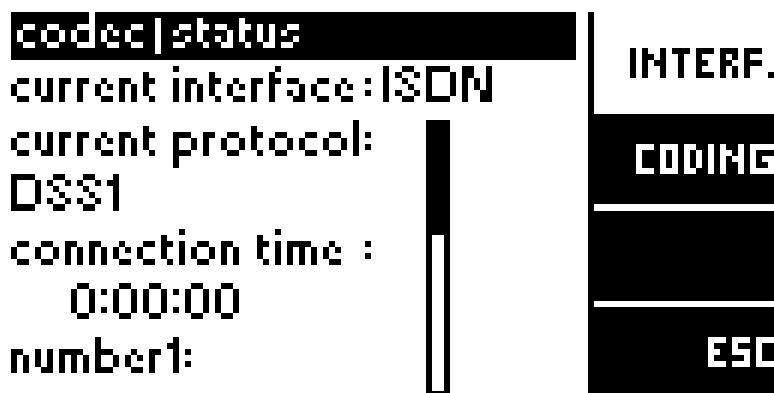
- current protocol: D-channel protocol (DSS1, NI1, 5ESS , Jate, Austel or VN)
- Connection time (if not connected 0)
- Number 1 to 8
  If ISDN number of connection partner cannot be shown '*****' is displayed
- IMUX format in use (e.g. auto, J.52, Musictaxi etc.)
- Name of the remote codec (only available if connection partner is a MAYAH codec).

c) 3G/UMTS (optional, advanced models only)

```
codec|status
current interface:3G
current protocol:
RTP
cell technology   :
HSDPA
connection time :
```
```
INTERF.

CODING

ESC
```
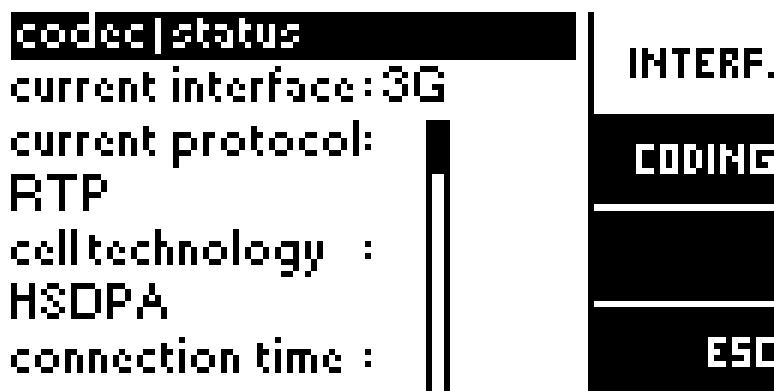
- current protocol: SIP, RTP
- connection type: 3G (UMTS, HSDPA, HSUPA), GSM (GSM, GPRS, EDGE)
 **NOTE:**
  How detailed the connection type is displayed depends on service provider

- connection time (if not connected 0)
- connection quality (best, good, sufficient, bad)
- signal strength (graphic & text)
  - 3 bars: best
  - 2 bars: good
  - 1 bar: sufficient
  - no bar: bad
  - blinking: no connectivity
- provider: Service provider ID
- current local IP-address (as delivered by provider)
- IP- or SIP-address of connection partner

- input bit rate (IBR) in kbps
- output bit rate (OBR) in kbps
- jitter in ms
- lost packets
  These are packets lost during transmission and cannot be recovered.
- dropped packets
  These are packets received in a wrong sequence order. Since delay buffer is not big enough these packets cannot be reordered and therefore they're dropped. This can be improved by setting a higher delay buffer (see Codec/ Setup/Interface/Ethernet) and/or by activation of the AJC (see System/Misc/ AJC)

d) POTS (optional, advanced models only)

- Connection time (if not connected 0)
- Number

e) WLAN (future option, advanced models only)

- current protocol: SIP, RTP
- connection time (if not connected 0)
- connection quality (best, good, sufficient, bad)
- signal strength (graphic & text)
  - 3 bars: best
  - 2 bars: good
  - 1 bar: sufficient
  - no bar: bad
  - blinking: no connectivity
- current local IP-address
- IP- or SIP-address of connection partner
- input bit rate (IBR) in kbps
- output bit rate (OBR) in kbps
- jitter in ms
- lost packets
  These are packets lost during transmission and cannot be recovered.
- dropped packets
  These are packets received in a wrong sequence order. Since delay buffer is not big enough these packets cannot be reordered and therefore they're dropped. This can be improved by setting a higher delay buffer (see Codec/ Setup/Interface/Ethernet) and/or by activation of the AJC (see System/Misc/ AJC)

Note:
Parameters shown in this screen cannot be modified.

3.2.2.2 Coding

Here the current encoding parameters are displayed for both encoder and decoder. It can be selected between them with ◀ and ▶ cursor keys.
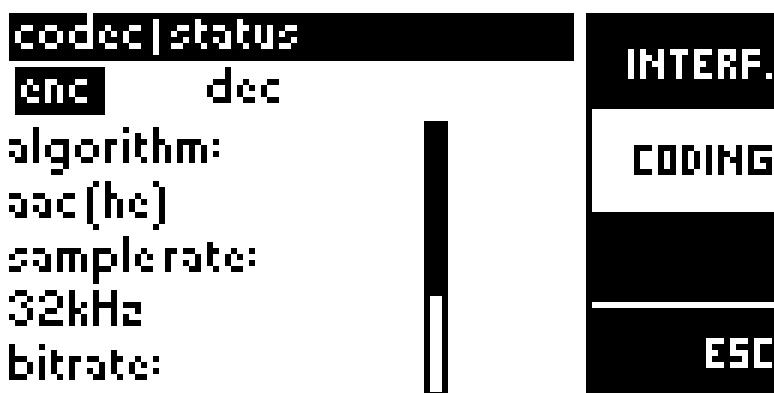
The coding status displays the following parameters for:
a) Enc (Encoder):
- Algorithm
- Sample rate
- Bit rate
- Mode

b) Dec (Decoder):
- Algorithm
- Sample rate
- Bit rate
- Mode

Note:
Parameters shown in this screen cannot be modified.

3.2.3 Setup menu

In the setup menu the following configurations can be done
- Settings of all communication interfaces (INTERF; F1)
- Coding settings (QUALITY; F2)
- Special applications (APPS; F3)

3.2.3.1 Interface menu

Here all necessary configuration steps can be done for all communication interfaces.
Possible communication interfaces:
- Ethernet (always available)
- ISDN (depends on model)
- 3G/UMTS (depends on model; optional)
- POTS (depends on model; optional)
- WLAN (depends on model; optional; future option)
- ASI (depends on model)

3.2.3.1.1 Ethernet

Here the IP settings can be done for internal electrical network card of C11. For C1191 Advanced Dual IP Codec the IP settings can be done for both Ethernet interfaces separately.
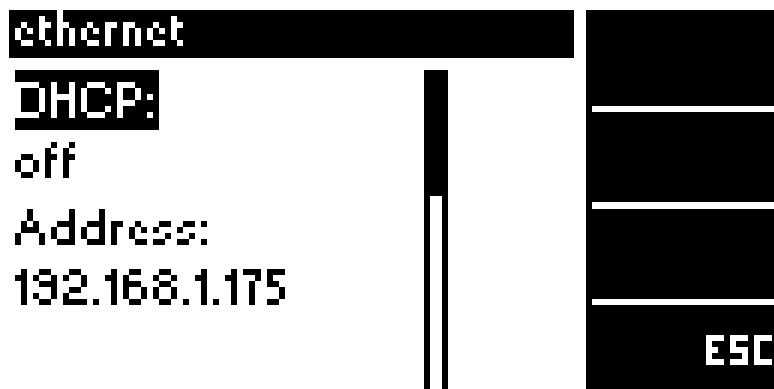
The following parameters can be set:

a) DHCP
DHCP (= **D**ynamic **H**ost **C**onfiguration **P**rotocol) enables C11 to configure its IP-settings (except SIP) automatically with help of a DHCP server. To enable DHCP set this parameter to 'client'.

It is not recommended to activate DHCP for C11 models without front panel controls, since the device can become inaccessible via IP in case of the network conditions change.

b) Address
- sets the IP address for the appropriate interface. (e.g. 192.168.10.50) if DHCP is deactivated.

c) Netmask
- sets the subnet mask for the appropriate interface. (e.g. 255.255.255.0) if DHCP is deactivated.

d) Gateway
- sets the IP address of the default network Gateway (for the appropriate interface) if DHCP is deactivated.

e) DNS Server
- sets the IP address of the DNS (= **D**omain **N**ame **S**ystem) server for the appropriate interface if DHCP is deactivated.

f) Delay
- sets the size of the receive buffer in ms.
Max. possible value 5,000 ms.
Note:
RTP packets can be resorted if they are received in the wrong order. The higher the value is, the more packets can be resorted. Generally receive buffer value

should be bigger than average network jitter (see Codec/Status/Interface)
Note 2:
If AJC is activated the delay value set here will be added to the value measured by AJC (see System/Misc/AJC)

g) SIP (Session Initiation Protocol)
- configures all the parameters of SIP session.

Globalproxy
This field allows a global SIP proxy to be set. This can be used to force all SIP messages to pass through a certain server.
In this field an IP-address or a URL can be entered.
This setting is optional and usually left blank.

Stunserver
A STUN server (= **S**imple **T**ransversal of **U**DP Through **N**ATs) is necessary that a client behind a NAT or NATs can find its public IP address. NAT stands for **N**etwork **A**ddress **T**ranslation.
The public IP address is necessary since the SIP device on the other end needs this info to find the local client.
In this field an IP-address or a URL can be entered.
This setting is optional.

Redials
The number of Redials which will be attempted.
A Redial will occur if the other party cannot be reached either through being busy, if there's no response, or if the other party disconnects/drops the call.

Account Id
Here the SIP registration profile can be selected. C11 allows to store 5 independent SIP profiles of which only one can be active at a time. The Account Id is used to select the SIP-Account that can be edited or (de-)activated.

Account active
To register with a SIP Server an account must be activated. Only one account can be active at a time. To register with a server supply the necessary credentials / account data (see below) and set 'Active' to 'on'. Setting the account to 'off' will start a de-registration and enable editing of the credentials.

Account Registrar
The Registrar is the SIP registration server which resolves the SIP address to a real IP address. The SIP client must register itself to a Registrar first before it can use its service.
In this field an IP address or a URL can be entered.
The registration comprises the following access data:
- Name
- Password
- Phone Number (not always necessary)

Account Phonenr
Here the phone number of the registration access data can be entered. This parameter is not always necessary.

Account Username
Here the name of the registration access data can be entered.

Account Password
Here the password of the registration access data can be entered.

3.2.3.1.2 ISDN

Here the settings can be done for the 4 internal ISDN S_0 interfaces of C11 (only C1140/41, C1160/61).

```
isdn
Channel
Protocol
PBX
G.711 options
Redials                    ESC
```
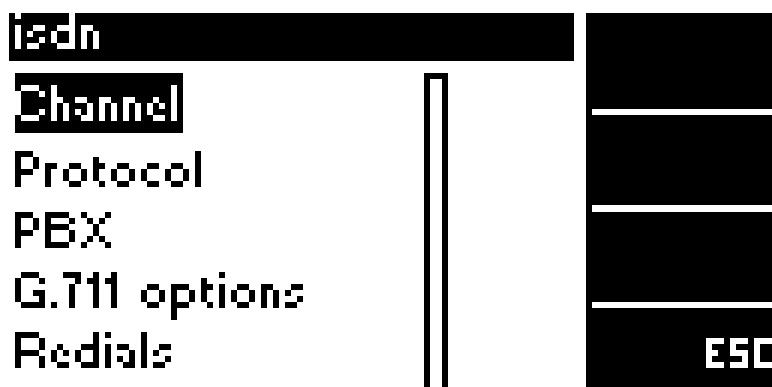
a) Channel
This item enables to set the MSN/ID and/or the SPID for every of the available 8 B-channels.

```
channel
Channel:
1
MSN:
                           ESC
```
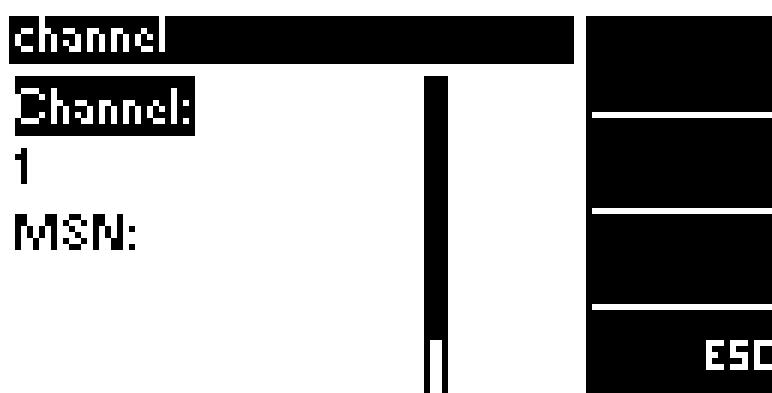
MSN (= Multiple **S**ubscriber **N**umber**)**
In this field the MSN (D-channel protocol DSS1 or VN4) or the ID (all other D-channel protocols) is entered.
The most common reason to use MSN are:
- Multiple ISDN devices using the same ISDN service uses one ISDN bus (e.g. C11 and telephone are connected to the same ISDN bus)
- C11 is connected to a PBX (=**P**rivate **B**ranch **E**xchange)

Note:
If a C11 is connected directly to an ISDN **DSS1** S_0 bus and no other device shares this ISDN bus then no MSN's must be entered. 'Directly' means that no PBX is used.

Note 2:
At D-channel protocols NI1 and 5ESS an ID must be assigned for **every** B-channel. Often the last 4 digits of the ISDN number must be entered as ID number.

Note 3:
MSN/ID cannot be longer than the local ISDN number (no country or area codes should be used).

SPID (=Service **P**rofile **I**dentifier**)**
SPID's are only in use with the D-channel protocol NI1 and 5ESS in Northern America. At these two protocols it is mandatory to assign every B-channel a separate SPID.
Please ask the local ISDN provider for further details.

b) Protocol

This item enables to select the **D-channel protocol** to:
- DSS1 (Europe)
- NI1 (North America)
- 5ESS (North America)
- Jate (Japan)
- VN (obsolete French national protocol; usually replaced by DSS1)
- AUSTEL (obsolete Australian national protocol; usually replaced by DSS1)

Furthermore this item enables to set:

Active layer 1 mode
- determines whether ISDN Layer 1 stays active all the time, or not.
When C11 is used in the Netherlands, this value should definitely be set to ON.

Answer time
- defines the 'telegram' interval (used in ISDN connections) - in milliseconds. The called MAYAH codec sends out its 'telegram' 10 times till the ISDN answer delay expires. The default value is 5,000 ms.

c) PBX (=Private **B**ranch Exchang**e)**

pbx
PBX:

PBX digits:
0

ESC

PBX and **PBX digits**
When C11 is connected to a PBX or ISDN switch, it is often necessary to add a number for external access (e.g. 9). PBX digits determines the number of digits BEFORE the 'additional preceding PBX number' becomes valid.
For example:
- PBX: 9
- PBX digits   :   5
Entered number: 1234   Dialed number: 1234
Entered number: 01234   Dialed number: 901234

Predial
Sometimes it is necessary to use a special provider to guarantee the quality of the ISDN service or the carriage of ISDN calls through a Gateway. Usually a special provider can be selected by dialing a special call-by-call number before the normal number.
This **Predial Number** precedes EVERY dialled number (Direct dial or Phone book).

National
- determines how a national call is shown.
For example:
- National: 0
- identification of national call: 811551762
- number displayed: 0811551762

International
- determines how an international call is shown.
For example:

- international: 00
- identification of international call: 49811551762
- number displayed: 0049811551762

d) G.711 options
This dialog enables to set miscellaneous parameters for G.711 use (ISDN telephony):
The following parameters can be set:

G.711
North America/Japan and Europe use a different coding method for ISDN telephony.
Thus, the following alternatives are available:
• A-law (as used in Europe – uses non linear PCM, with 13 segments)
• μ-law (as used in USA and Japan – also non-linear PCM; but 15 segments)
Note:
If G.711 law is not set properly then strong disturbances occurs at G.711 transmissions.

G.711 level
Sometimes G.711 signals (i.e. normal telephone signals) are over modulated and therefore their too high audio levels can cause distortions. Therefore G.711 attenuation can be set to:
• 0 dB (no attenuation)
• 6 dB
• 12 dB

G.711 ISDN service
Here the service used for G.711 calls are set. It can be selected between
• Speech (default and standard)
and
• Telephony

e) Redials
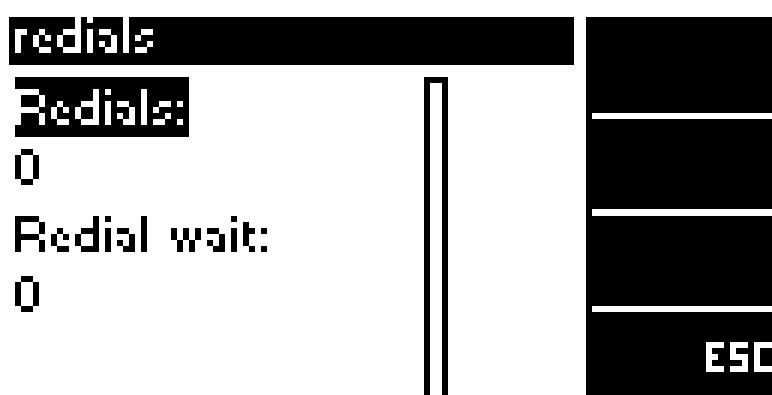
Redials
- defines the number of Redials which will be attempted.
A Redial will occur if the other party cannot be reached either through being busy,

if there's no response, or if the other party disconnects/drops the call.

Redial wait
- sets the interval time between the redial attempts (in seconds).

3.2.3.1.3 POTS (PSTN)

Here the settings can be done for MAYAH POTS card (optional, advanced models only).
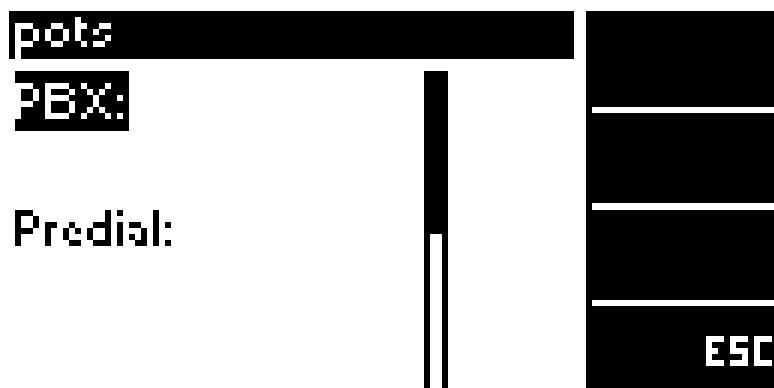
a) PBX (=Private **B**ranch **E**xchange**) and PBX digits**
When C11 is connected to a PBX switch, it is often necessary to add a number for external access (e.g. 9). PBX digits determines the number of digits BEFORE the 'additional preceding PBX number' is preceded.
For example:
- PBX: 9
- PBX digits   :   5
Entered number: 1234   Dialed number: 1234
Entered number: 01234   Dialed number: 901234

b) Predial
Sometimes it is necessary to use a special provider to guarantee the quality of the service or the carriage of telephone calls through a Gateway. Usually a special provider can be selected by dialing a special call-by-call number before the normal number.
This **Predial Number** precedes EVERY dialled number (Direct dial or Phone book).

c) Answer time
Time (in ms) between connection is established and start of encoding (i.e. sending of audio data). By default this value is set to 1,000 ms (Range is 100 to 5,000 ms).

d) Delay
Sets the size of the receive buffer in ms.
Max. possible value 5,000 ms.
Note:
Internally the POTS transmission is an IP/RTP transmission. RTP packets can be resorted if they are received not in the right order. The higher the value is, the

more packets can be resorted. Generally receive buffer value should be bigger than average network jitter (see Codec/Status/Interface)

⚠️ *Due to the usually very limited bandwidth at POTS connections the most efficient MPEG-4 HE-AACv2 (AAC HE) stereo is used by C11, no matter which Codec Quality has been chosen previously. C11 evaluates the quality of current connection and adjusts the bit rate automatically.*

3.2.3.1.4 3G/UMTS

Here the settings can be done for MAYAH 3G/UMTS card (optional, advanced models only).

a) PIN
PIN number of your SIM card must be entered.

⚠️ *Check if the PIN is entered correctly before insert the 3G/UMTS card. C11 provides the PIN to the SIM card automatically. Three false attempts will block the SIM card.*

Note:
In case that the PIN is deactivated on your SIM card, this field will be ignored by C11.

b) APN (Access Point Name)
APN credentials are provided by your mobile service provider; e.g. web.vodafone. de for Vodafone Germany.
Note:
APN values are case-sensitive.

c) Technology
Here can be determined which connection type is prioritized by 3G/UMTS card. Following selection is possible:
- GSM only: connect to GPRS/EDGE networks only
- 3G only: connect to UMTS/HSDPA/HSUPA networks only
- GSM first: prefer GPRS/EDGE networks
- 3G first: prefer UMTS/HSDPA/HSUPA networks (default)
- No change: keep network once connected

- Auto: card decides

d) Domain
Here behaviour for the preferred domain inside the mobile cell can be set.
- Circuit switched only
- Packet switched only
- Any: Circuit and/or packet switched (default)
- No preference
- No change
- Packet switched attach on demand
- Packet switched detach on demand

e) Frequency
In different parts of the world different frequencies for 3G communication are used. Here the appropriate frequency range can be set.
- Europe (default)
- U.S.

f) User
3G user identification

g) Password
User confirmation by password

h) Delay
- sets the size of the receive buffer in ms.
Max. possible value 5,000 ms.
Note:
RTP packets can be resorted if they are received not in the right order. The higher the value is, the more packets can be resorted. Generally receive buffer value should be bigger than average network jitter (see Codec/Status/Interface)
Note 2:
If AJC is activated the delay value set here will be added to the value measured by AJC (see System/Misc/AJC)

General note:
Usually just PIN and APN must be entered. If you are unsure about PIN, APN, Username and Password, please contact your mobile service provider.

3.2.3.2 Quality

```
con|setup
L3 Stereo
AAC Mono              save        INTERF.
AAC Stereo                        QUALITY
AAC HE 24 Stere
                                     ESC
:48      AAC      128
```
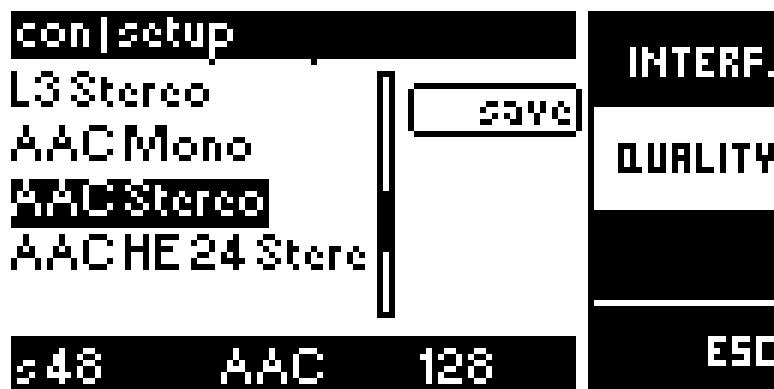
Quality comprises the configuration of the following coding parameters:

- algorithm
- sample rate
- bit rate
- operational mode

The selected quality determines which coding settings are used at a transmission.

By default the following quality profiles are available and can be loaded:

- **G.711 (A-law):** usually used in Europe
- **G.711 (µ-law):** usually used in America and Japan
- **G.722**
- **4SB Mono (optional; C1140/41, C1160/61 only)**
  - Algorithm: 4SB ADPCM
  - Sample rate: 32 kHz
  - Bit rate: 128 kbps
  - Mode: Mono
- **L2 Mono 128**
  - Algorithm: MPEG Layer 2
  - Sample rate: 48 kHz
  - Bit rate: 128 kbps
  - Mode: Mono
- **AptX nosync Stereo (optional):**
  - Algorithm: AptX no sync
  - Sample rate: 48 kHz
  - Bit rate: 384 kbps
  - Mode: Stereo
- **AptX nosync Dual Mono (optional):**
  - Algorithm: AptX no sync
  - Sample rate: 32 kHz
  - Bit rate: 256 kbps
  - Mode: Dual Mono
- **AptX Mono (optional):**
  - Algorithm: AptX
  - Sample rate: 32 kHz

- Bit rate: 128 kbps
- Mode: Mono
- **AptX nosync Mono (optional):**
  - Algorithm: AptX no sync
  - Sample rate: 32 kHz
  - Bit rate: 128 kbps
  - Mode: Mono
- **EaptX Stereo (optional):**
  - Algorithm: Enhanced AptX 16 bit
  - Sample rate: 32 kHz
  - Bit rate: 256 kbps
  - Mode: Stereo
- **EaptX Mono (optional):**
  - Algorithm: Enhanced AptX 16 bit
  - Sample rate: 48 kHz
  - Bit rate: 192 kbps
  - Mode: Mono
- **APT Clear Mode (optional):**
  - Algorithm: AptX
  - Sample rate: 16 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- **Old AptX 128/256 (optional):**
  - Algorithm: AptX no sync
  - Sample rate: 32 kHz
  - Bit rate: 256 kbps
  - Mode: Dual Mono
  - **Note:**
  This profile can be used to connect to older Apt-X devices via ISDN with 128 kbps (1 ISDN Line, 2 B-Channels) for mono connections or 256 kbps (2 ISDN Lines, 4 B-Channels) for stereo
- **Old AptX 192/384 (optional):**
  - Algorithm: AptX no sync
  - Sample rate: 48 kHz
  - Bit rate: 384 kbps
  - Mode: Dual Mono
  - **Note:**
  This profile can be used to connect to older Apt-X devices via ISDN with a higher quality with 192 kbps (2 ISDN Lines, 3 B-Channels) for mono connections or 384 kbps (3 ISDN Lines. 6 B-Channels) for stereo
- **L2 Mono:**
  - Algorithm: MPEG L 2
  - Sample rate: 24 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- **L2 Joint Stereo:**
  - Algorithm: MPEG L2
  - Sample rate: 32 kHz
  - Bit rate: 128 kbps
  - Mode: Joint stereo

- **L2 Stereo:**
  - Algorithm: MPEG L2
  - Sample rate: 48 kHz
  - Bit rate: 256 kbps
  - Mode: stereo
- **L3 Mono:**
  - Algorithm: MPEG L3
  - Sample rate: 32 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- **L3 Joint Stereo:**
  - Algorithm: MPEG L3
  - Sample rate: 48 kHz
  - Bit rate: 128 kbps
  - Mode: Joint stereo
- **L3 Stereo:**
  - Algorithm: MPEG L3
  - Sample rate: 48 kHz
  - Bit rate: 192 kbps
  - Mode: Joint stereo
- **AAC Mono:**
  - Algorithm: AAC (MPEG 4)
  - Sample rate: 48 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- **AAC Stereo:**
  - Algorithm: AAC (MPEG 4)
  - Sample rate: 48 kHz
  - Bit rate: 128 kbps
  - Mode: Stereo
- **AAC HE 24 Parametric Stereo:**
  - Algorithm: AAC (HE)
  - Sample rate: 32 kHz
  - Bit rate: 24 kbps
  - Mode: parametric stereo
- **AAC HE 64 Stereo:**
  - Algorithm: AAC (HE)
  - Sample rate: 32 kHz
  - Bit rate: 64 kbps
  - Mode: Stereo
- **Linear Mono:**
  - Sample rate: 48 kHz
  - Bit rate: 768 kbps
  - Mode: Mono
- **Linear Stereo:**
  - Sample rate: 48 kHz
  - Bit rate: 1,536 kbps (1.5 mbps)
  - Mode: Stereo

The selected quality profile can be activated by stepping to the 'save' icon and

pressing the OK button.

> *Using optional Old Apt-X or Apt Clear Mode profiles as well as 4SB Mono profile disables MAYAH automatic codec recognition system FlashCast®. No connection to devices with different settings is possible while these profiles are active! To re-enable automatic codec recognition after using these profiles just choose any other quality profile and activate it.*

Note:
New quality profiles with the desired coding settings can be created any time by using the integrated Web Remote of the C11 (Menu SETUP / Profile).

3.2.3.3 Enhanced Applications

C11 support several powerful enhanced applications:
- Dual mode (only C1140/41, C1160/61):
  - enables to establish two ISDN connections
- Redundancy (only C1190/91)
- Intercom (optional):
  - enables to establish an additional IP connection besides the main connection

> ⚠️ *a) Activation of any Enhanced Application disables Recorder functionality, and vice versa, if Recorder is currently active it is impossible to activate an Enhanced Application.*
>
> *b) Upon activation of certain Enhanced Applications the audio channels of the mixer matrix usually assigned to Recorder are used for audio routing of the enhanced application. If any changes required in the audio routing / panning they can be stored for future use in the menu MONITOR/MIXER/MEM/SKINS*

3.2.3.3.1 Intercom

In Intercom Mode besides the main connection a 'command connection', e.g. to call for technician can be established additionally.

This 'command connection' has following limitations:
- it is an IP-based connection
- just G.711, G.722 or Linear coding algorithms are supported

The destination of an intercom connection can be defined in this menu.

When Intercom Mode is selected, the intercom connection can be established and hung up by pressing '0' button for approx. 3 seconds.

Note:
Intercom mode is optional and can be activated by entering a key code to the device. Contact MAYAH if you need this option.

3.2.3.3.2 Dual Mode

Dual Mode (C1140/41, C1160/61 only) enables establishing of two independent ISDN connections.

Both connections have following limitations:
- only ISDN connections are supported
- only mono modes are supported
- only 64 kbps per connection supported

Dual Mode is indicated as a following symbol in the status bar ⬛⬛ or ⬛⬛

(with an additional framing indicator) during connection.

When Dual Mode is activated two codec menus can be selected by pressing F1 or F2 button:

Under Setup (F3)/Quality(F2) the identical quality for both Codecs can be selected (e.g. G.722, L2 mono etc.).

At both codec menus independently
- connection can be established/hung up
- status of connection can be requested

By default the audio inputs and outputs of the left channel are used by the first connection, whereas audio inputs and outputs of the right channel are used by the second connection.

Note:
Different MSN's should be assigned to the B-channels. This allows to distinguish between the audio at incoming calls.

Example:
- English reporter at the analog input (L), MSN of first B-channel: 33
- Spanish reporter at the analog input (R), MSN of second B-channel: 34

Call +44 12345 33 to listen to the English voice, call +44 12345 34 to listen to the Spanish voice.

> *It is possible to modify the default audio routing for Dual Mode to achieve some advanced routing scenarios. However, this should only be performed by an experienced user. See also chapter Monitor/ Mixer/Profiles/Skins*

3.2.3.3.3 Redundancy

This is a special feature of the C1190/91 Advanced Dual IP Codecs with two separate Ethernet interfaces.

Data transmissions via an IP network could suffer from packet loss and or packet corruption. To reduce the risk of packet loss and to increase the reliability of a connection C1190/91 are capable of doubling the IP stream to send it via a secondary network interface to physically separated networks. With this redundancy the total error rate can be reduced significantly.

Please note that the primary stream is sent via the Ethernet interface which is normally used for audio transmission (labeled LAN1). Redundancy stream will be sent via the Ethernet interface which is also used for control tasks (labeled LAN). See also Chapters First Start/Connectors and Useful Hints/Default IP settings.

Upon activation of the Redundancy mode the Codec/Connect/Direct menu will show a 'primary destination' and a 'redundancy destination' fields. These fields have to be filled in with the primary and the redundancy destination IP addresses.

Attention should be paid to the correct network configuration, including address, netmask, gateway (if necessary) for both interfaces.

> *The IP port for the redundancy connection is equivalent to the primary RTP port plus 1000. E.g. default RTP port for audio streaming is 5004, hence the redundancy connections will be done via the port 6004.*

For more details on Redundancy Streaming implemented by MAYAH you may also check an Application Note No. 28 in the Support/Downloads section at www.mayah.com

3.3 Record/Playback

The play / record menu represents the recorder functionality of C11. This feature is provided in following C11 models (advanced models):
- C1150, C1151, C1155
- C1160, C1161
- C1190, C1191

Recorder functionality means that audio can be recorded in files and existing files can be played back from supported storage media.

The play/record menu supports the following:

- Playback and FTP upload of MPEG- and Linear coded files (format: wave or broadcast wave) which are stored on either
  - SD card,
  - USB stick or
  - CF card (via PC card slot adapter)
- Recording of MPEG- and Linear coded files (format: wave or broadcast wave) which can be stored on either
  - SD card,
  - USB-stick or
  - CF card (via PC card slot adapter)
- Overview of all installed audio storage media (SD card, USB stick, CF card)

Sub menu items are:
- Play menu (F1)
- Record menu (F2)
- Card (F3)

3.3.1 Play menu

Meaning of the menu items:
- F1: Starts playback (▶ or ▶|| shown)
- F2: Upload files / Stops playback when track is playing (■ shown)
- F3: Tracks menu

NOTE:
To directly select the desired track use the ◀ and ▶ cursor buttons.

a) Elapsed time / remaining time
Format: min:sec,
If elapsed playback time or remaining playback time is shown can be set via menu item System/Miscellaneous (Display options).

b) Play Progress
Current playback position is shown as ▼ on the progress bar.

c) Markers
Markers can be set by pressing OK button during playback.
Markers are displayed as thin vertical lines on the progress bar.
To jump between markers use ◀ and ▶ cursor buttons in PLAY or PAUSE mode.
Markers can only be deleted in PAUSE mode. Jump to the referring marker using ◀ and ▶ cursor buttons and press OK button.
Note:
Markers can only be set for the files in broadcast wave format (usually PCM WAV, L2 or L3 files).

d) Coding settings of file (status bar)
- Mode
- Sample rate in kHz
- Algorithm:
   - L2 for MPEG L2
   - L3 for MPEG L3
   - AAC for MPEG-4 AAC
   - HE for AAC (HE)
   - LIN or PCM for linear
- Bit rate in kbps (only shown for MPEG algorithms)

3.3.1.1   Upload

This Upload feature enables to transfer via FTP or E-mail one or all audio tracks (files) of the selected storage media: SD card (F1, default), USB (F2), PC card (F3).
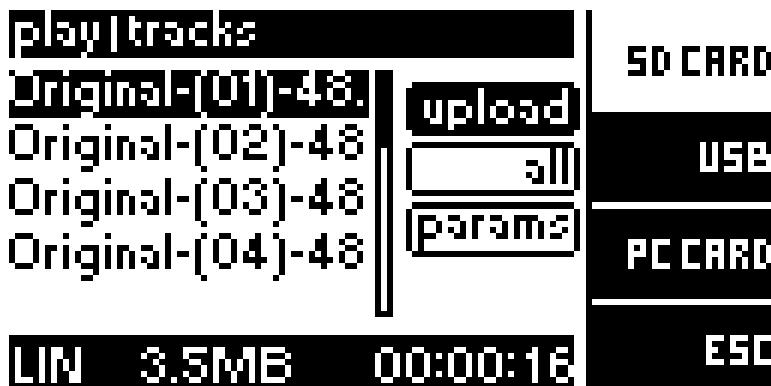
Meaning of the control buttons

Upload
Starts the transfer of the selected track(s) according to the settings configured at **params**

All
Selects all tracks of the storage media

Params
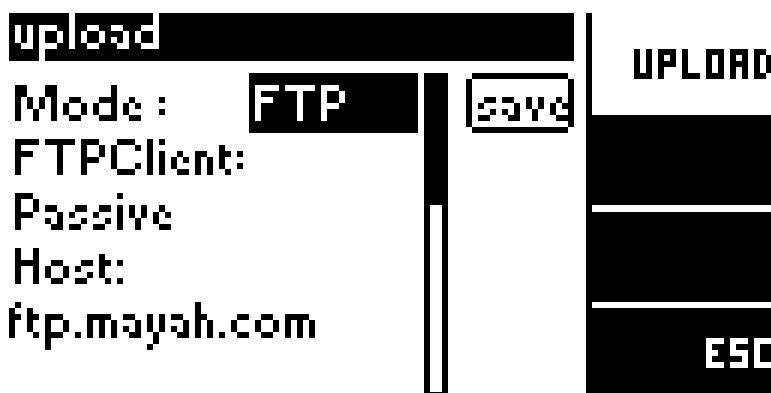
Params (Parameters) dialog defines mode and settings of transfer. Two modes of transfer are possible:
a) FTP
- FTP Client: Active / Passive (default)
- Host: URL or IP-address of the FTP upload server
- User
- Password
- Path: desired path at the FTP upload server (no path means 'root directory')

> ⚠️ *If the file with the same name is already available on the remote FTP server, it will be overwritten without further notice.*

- IFace: interface to use for the next upload (default: LAN/Ethernet). If any further IP-based interface like 3G or WLAN are currently available on the C11 it can be selected to carry on the upload.

b) E-Mail (future option)

3.3.1.2   Tracks

In the Tracks Menu the storage media can be selected by pressing Function Keys:

- F1: SD Card
- F2: USB (USB storage media)
- F3: PC Card (e.g. Compact Flash card with PCMCIA Adapter
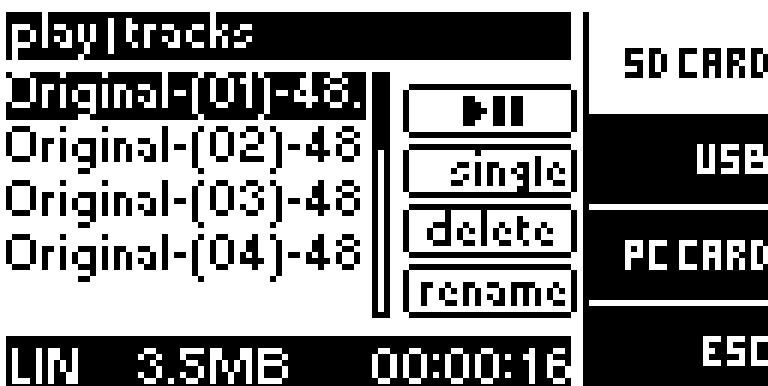
Following actions can be done with the selected track:
- Pressing OK button (or ▶ cursor button) will activate the PLAY/PAUSE icon (▶||) on the right. To start playback of the selected track OK button must be pressed once again.
- Delete by pressing the OK button once and then stepping to the "delete" icon
- Rename by pressing the OK button once and then stepping to the "rename" icon
- Repeat mode can be set to:
  - single (no repeat)
  - rep. one (repeat selected track)
  - rep. all (repeat all tracks; starts playback from the selected track)

Also displayed is a following status information:
- audio format
- size of the selected track (file) in bytes
- length of the selected track (HH:MM:SS)

3.3.2 Record menu

At opening of this screen the recording can be started immediately by pressing the F1 function key.

Storage media and audio quality / format settings can be chosen in the Setup menu by pressing F3 function key.
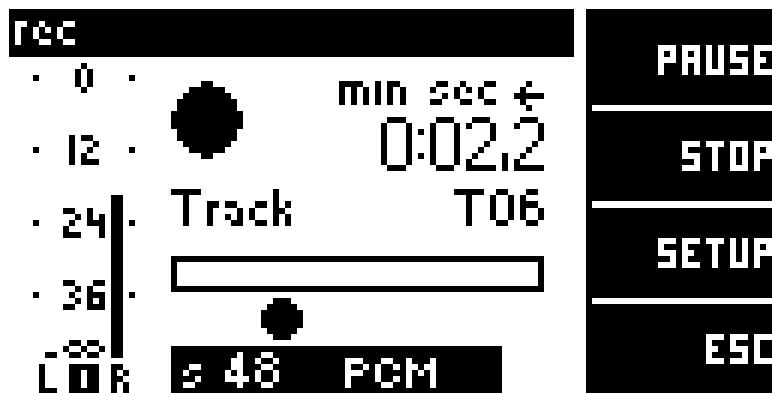
Meaning of the function buttons:

- F1: Starts record / pause record (● or ●|| shown)
- F2: Stops record (■ shown)
- F3: Setup menu

Note:
'Pause record' means that pressing F1 button continues recording on the same track (file).

'Stop record' means that recording on the selected track is stopped and pressing the F1 button will record on a new track (file).

Marker
During the recording a marker can be set by pressing the OK button.
Note:
Markers can only be set for the files in BWF format (usually PCM WAV, L2 or L3 files).

3.3.2.1 Setup

In this screen the following recording parameters can be set:
- Quality (i.e. coding algorithm, bit rate, sample rate etc.)
- Storage (selection of the storage media)

3.3.2.1.1 Quality
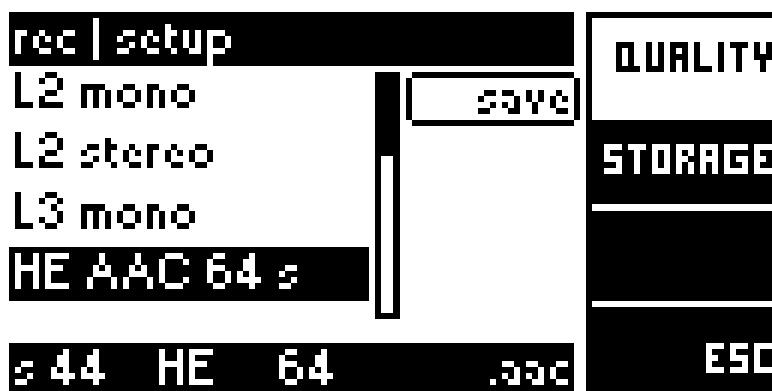
The desired recording quality can be chosen with the cursor buttons ▲ ▼ and confirmed by pressing the OK button twice.

By factory default the following coding formats can be selected for recording:

- L2 Mono:
  - Algorithm: MPEG L 2
  - Sample rate: 24 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- L2 Joint Stereo:
  - Algorithm: MPEG L2
  - Sample rate: 32 kHz
  - Bit rate: 128 kbps
  - Mode: Joint stereo
- L2 Stereo:
  - Algorithm: MPEG L2
  - Sample rate: 48 kHz
  - Bit rate: 256 kbps
  - Mode: stereo
- L3 Mono:
  - Algorithm: MPEG L3
  - Sample rate: 32 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- L3 Joint Stereo:
  - Algorithm: MPEG L3
  - Sample rate: 48 kHz
  - Bit rate: 128 kbps
  - Mode: Joint stereo
- L3 Stereo:
  - Algorithm: MPEG L3
  - Sample rate: 48 kHz
  - Bit rate: 192 kbps
  - Mode: Stereo

- AAC Mono (raw format, may be not compatible with other players):
  - Algorithm: AAC (MPEG 4)
  - Sample rate: 48 kHz
  - Bit rate: 64 kbps
  - Mode: Mono
- AAC Stereo (raw format, may be not compatible with other players):
  - Algorithm: AAC (MPEG 4)
  - Sample rate: 48 kHz
  - Bit rate: 128 kbps
  - Mode: Stereo
- AAC HE 24 Stereo (raw format, may be not compatible with other players):
  - Algorithm: AAC (HE)
  - Sample rate: 32 kHz
  - Bit rate: 24 kbps
  - Mode: Parametric stereo
- AAC HE 64 Stereo (raw format, may be not compatible with other players):
  - Algorithm: AAC (HE)
  - Sample rate: 44.1 kHz
  - Bit rate: 64 kbps
  - Mode: Stereo
- Linear Mono:
  - Sample rate: 48 kHz
  - Bit rate: 768 kbps
  - Mode: Mono
- Linear Stereo:
  - Sample rate: 48 kHz
  - Bit rate: 1,536 kbps (1.5 mbps)
  - Mode: Stereo

3.3.2.1.2 Storage
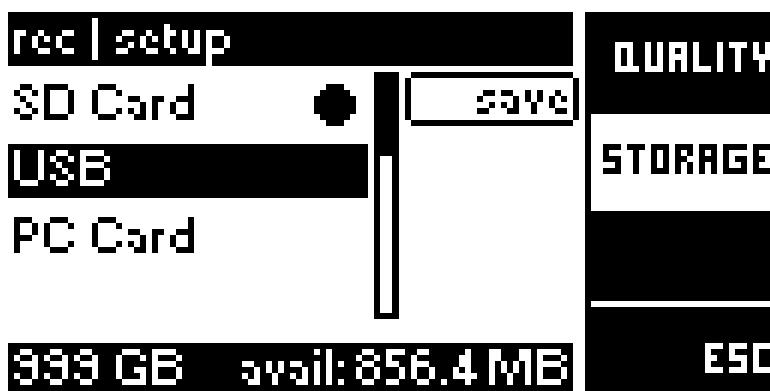
All detected storage devices are shown. Maximum 3 drives are listed:
- SD card
- USB media
- PC card

If multiple storage devices are available, the desired medium for recording can be chosen with the cursor buttons ▲ ▼ and confirmed by pressing OK button

twice.

The chosen storage device is indicated by a following symbol: ●

3.3.3   Card menu

The card menu supplies an overview (size, free space available) of all 3 possible audio media storage devices:
- SD card (Standard SD and SDHC cards are accepted)
- USB (e.g. USB memory stick)
- PC card (e.g. Compact Flash card with PC card slot adapter)

If a storage device is not detected then it's not listed.

Card menu screen
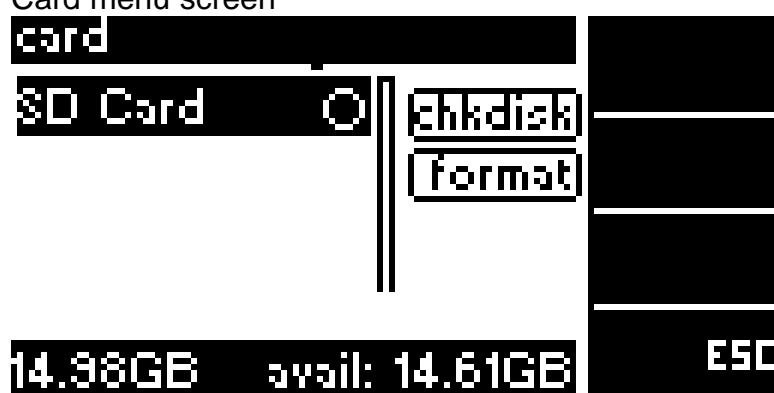
On the left side the list of the available storage devices is displayed. Free space is roughly indicated by the appropriate icons. Exact information of the currently selected storage medium size and available space is displayed on the right side.

If multiple storage devices are available, the desired medium can be selected with the cursor button ▲ ▼ .

For every available storage device following utilities can be used:
- **chkdisk** (Check Disk utility)
  This utility provides integrity check and error correction of the storage medium. After the check it generates a report on the found and corrected file system integrity errors.

- **format**   (Format Disk utility)
  C11 can only save files (tracks) on a properly formatted storage media. Usually storage media are preformatted by factory default. If this is not the case, this utility provides the possibility to format a storage media and prepare it for use with the C11, as well as with any standard PC or mobile devices.

⚠️   *Format will delete all data on the storage media.*

3.4   System

The first screen shown is "Configs" (Configurations).

3.4.1   Configurations

The configurations menu enables to save all current settings of C11 in a 'macro'. Such a macro can be used to easily restore a former scenario e.g . it is not necessary to remember mixer, codec and other settings to reestablish the transmission scenario to your studio last week.
Max. 50 configuration macros can be saved.
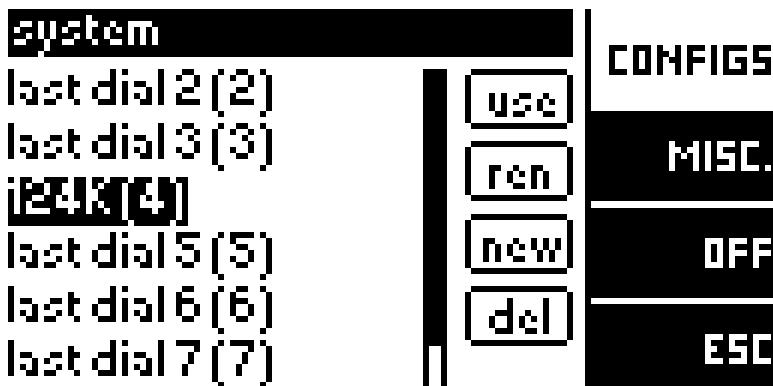
A configuration can be selected with the cursor buttons ▲ and ▼.

Following features are available:

a) Use
"Use" executes the currently selected configuration.
To prevent misuse the user will be asked if he/she really wants to execute this configuration.

b) Ren
Rename selected configuration

c) New
Save all current settings of the C11 in a macro. First the name of the macro is been requested which can be 128 chars long.

d) Del
Deletes an already existing configuration macro in the list.
To prevent misuse the user will be asked if he/she really wants to delete this configuration.

Note:
At every outgoing connection a configuration is stored automatically, named 'last dial xx'

3.4.2 Miscellaneous

At miscellaneous menu the general settings of C11 can be defined or requested. The different items can be selected via a list box with the cursor buttons ▲▼. The currently chosen item is highlighted.

The miscellaneous start screen looks like:

```
system
  Device ID            CONFIGS
  Date & Time           MISC.
  LCD Display            OFF
  System health
  Versions               ESC
```

3.4.2.1 Device ID

This screen enables to edit the name of C11 (max. 128 characters). Furthermore the serial number can be requested but not changed.

```
id
  Name:               CONFIGS
  Sydney               MISC.
  Serial number:        OFF
  N0030D6FF1808
                        ESC
```

3.4.2.2 Date & Time

This screen enables to:
• Set date
• Set time
• Set date format
  Selection between:
  - YYYY-MM-DD (Year-month-day)
  - MM/DD/YYYY (Month/Day/Year)
  - DD.MM.YYYY (Day.Month.Year)
• Set time format
  Selection between:
  - 12 h AM/PM
  - 24 h

```
time
Date:
2008 - 12 - 12
Time:
14:00:09
```
```
CONFIGS

MISC.

OFF

ESC
```
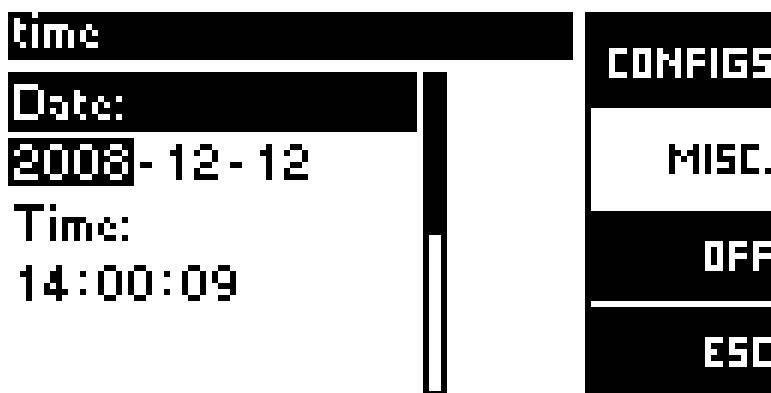
3.4.2.3   LCD Display

This screen enables to:
- Switch on or off the back light of the front panel
- Adjust the contrast of the LCD display with the cursor buttons ◀ and ▶

```
display
Backlight:
☒ on    ☐ off
Contrast:
[██████      ]
```
```
CONFIGS

MISC.

OFF

ESC
```
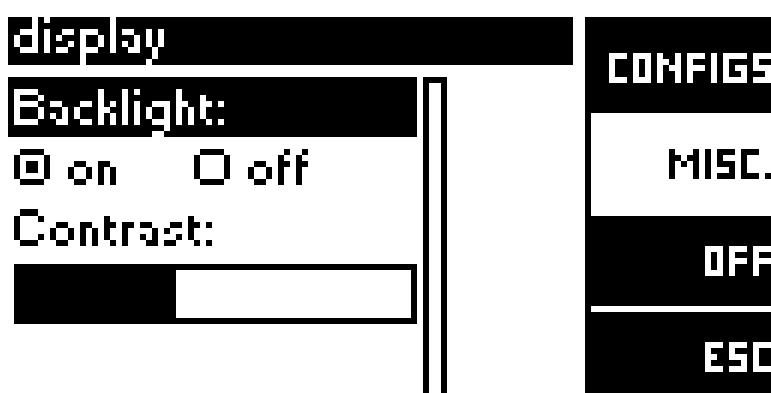
3.4.2.4   System health

Here the information about the following system parameters is shown:
- Temp: system temperature (in C°)

Note:
E.g. an operational temperature between 50 and 65 C° is quite normal for C11 at 20-22 C° environment temperature (depending on system load).
Note 2:
Alarm LED will light up if device is overheated and system temperature is higher than 85 C° or any of the system voltages is out of tolerance range (voltages can be monitored using SNMP or direct commands).

3.4.2.5   Versions

Here the firmware version of the C11 is displayed.

3.4.2.6   Connections

a) Accept Mode

Here can be set if incoming calls (via Ethernet, ISDN, UMTS/3G, POTS or WLAN) are accepted:

- automatically (default)

or

- manually

b) Auto Restore

Here can be set if actively established connections will be resumed automatically after power loss (e.g. switching C11 off and on during the active connection established from this particular unit).

- Auto (default, at the current firmware version: auto = on)
- On (C11 will resume connection)
- Off (C11 will not resume connection)

Note:
For most broadcasting production applications the positions "Auto" or "On" can be selected for automatic reconnection after possible power failure in a live transmission situation.

At the same time for most recording studio / voice over applications this function can be disabled to avoid automatic reconnection upon power restore and thus avoiding undesired distant call costs.

3.4.2.7 User Interface

Here can be set if C11 runs in either

- Expert Mode (default)
- User Mode (few menus are disabled)

3.4.2.8 Display option

This screen enables to set file playback time display to "elapsed time" or "remaining time" (default). See also chapter Play menu.

3.4.2.9 Factory Default

This menu item allows to reset the C11 to its factory defaults using front panel user interface. Please consult the chapter Useful Hints/How to reset C11 before using this function!

3.4.2.10 Timeouts

Here the following timeouts can be set:

- **Disconnect:**
  This timeout defines the period (in seconds) after which a connection is dropped if no valid framing is achieved. Ideally, it should be set higher than the Stat. framing timeout value.
  Its default value is 45 seconds.
- **Stat. framing** (usually just important at ISDN transmissions)
  This timeout defines the period (in seconds) after which C11 switches automatically to G.722 SRT coding at non-IP transmissions.
  Generally, there are two methods to synchronize G.722 data streams.
  G.722 with H.221 (in-band signalling)

H.221 uses a small amount of the data capacity (i.e.1.6 kbps of 64 kbps) to transmit the synchronization information in-band. Although G.722/H.221 is a recommended EBU standard, it's not very widespread.
G.722 SRT (Statistical Recovery Timing)
Synchronization requires finding the start bit of every G.722 octet, and is reached by evaluating the data pattern of the signals statistically. We DON'T recommend that you use a pure sine wave signal whilst trying to achieve synchronization, using G.722 SRT coding! This G.722 timer starts once the first ISDN line is connected. It is recommended that the G.722 SRT timeout be set to ~30 Seconds. This value is high enough not to interrupt any auto-detection process, but should still be acceptable for framing up.

- **Remote ctrl**
  This timeout defines the period (in seconds) after which an idle IP remote control session is closed automatically. The default value is 100 seconds.
  Note:
  This timeout can be helpful if a remote session was interrupted by the network (e.g. faulty switch) and new remote control attempts are blocked by C11 since it is 'convinced' it is still remote controlled (but it isn't).

3.4.2.11 AJC

The feature AJC (= Automatic Jitter Compensation) provides an automatic adaptation of the IP transmission to network capabilities when using the interfaces Ethernet, 3G or WLAN.The AJC optimizes the following parameters at:

- **Encoder side:**
  The information provided by the peer via RTCP is used for evaluating the network capabilities.
  If applicable the packet size is increased first, to improve the transmission (a bigger packet size results in less IP overhead). If increasing packet size does not lead to satisfactory results then the encoder bit rate will be reduced automatically.
- **Decoder side**
  If necessary the audio delay is increased to adapt the transmission to a current network conditions.
  Increasing the audio delay is achieved by increasing the receive buffer for incoming IP packets.

For both encoder and decoder the following parameters can be set independently:

- **mode:** AJC can be selected to
  - auto: AJC is enabled
  - off: AJC is disabled
  - default: AJC is reset to factory default
  (In this version: default = auto, period = 30s for encoder and decoder)
- **period:** Set evaluation time (by default 30 seconds)

3.4.2.12 Export Configuration

This feature enables to export the whole configuration including phone book and codec profiles to:
- USB storage media (recommended)
- SD Card
- PC Card
- FTP server

Note:
Following FTP parameters can be set:
- FTP Client: Active / Passive (default)
- Host: URL or IP-address of the FTP upload server
- User
- Password
- Path: desired path at the FTP upload server (no path means 'root directory')

3.4.2.13 Import Configuration

The exported configuration (see item above) can be loaded into the C11 with this feature in a similar manner as at Export config. For details see chapter Export config.

3.4.2.14 Ancillary Data

With a help of the RS232-USB adapter (see chapter Introduction/Useful Accessories) C11 also can transmit/receive ancillary data.

To initiate the adapter it must be connected to a C11 at start up. When adapter is active a blue LED lights up on its body.

The following ancillary data parameters can be set:
- Baudrate: Baud rates from 1,200 to 115,200
- Databits: 5, 6, 7, 8
- Parity: None, Even, Odd
  Definition of parity:
  A technique to test the integrity of digital data by checking an extra bit that holds a 0 or 1, depending if the data is an even number of 1 bits or an odd number of 1 bits.
- Stop Bits: 1, 2
- Handshake: None, Xon/Xoff, RTS/CTS, DSR/DTR
  Handshaking means that signals are transmitted back and forth to control (i.e. to start and stop) the transmission.

Note:
In most cases ancillary data transfer between two MAYAH devices can be done automatically. This also includes transportation of the data from/to GPIO interface. Additionally the parameter 'Format' for Encoder and Decoder can be set via Web Remote or by using a direct command. This may be necessary for some scenarios, e.g. when transmitting ancillary data to non-MAYAH devices or using some other than MPEG-based algorithms. Since the ancillary data implementation of the C11 is the same as for the CENTAURI II codecs, you can

find more background information in its manual. Visit www.mayah.com/help to download it or to browse on-line.

3.4.3 Switch off

To prevent accidental switch off this must be done via this menu item. This dialog also opens if F4 button is pressed longer than 2 seconds.

"Switch OFF" dialog looks like this:
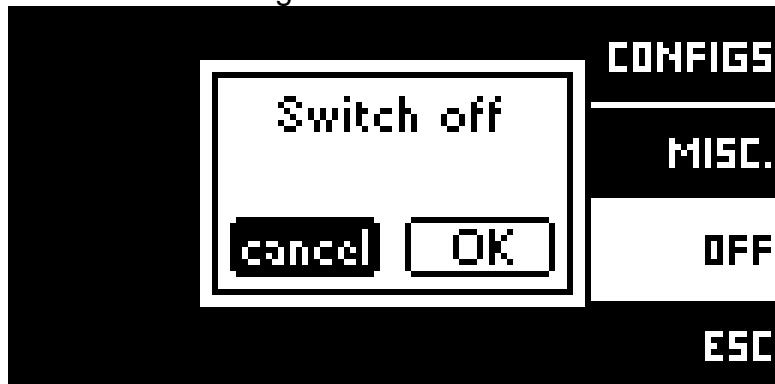
Since "cancel" is the default selection just pressing the OK button (which can happen accidentally) has no effect. To switch off C11 the user must first press the cursor button ▶ to select "OK" and then confirm this selection by pressing the OK button.

Part IV

How to use for

4   How to use for

4.1   Recording during transmission

a) Set Mixer

To guarantee that the right audio is recorded the appropriate mixer settings should be done at menu item <u>Monitor/Mixer</u> at item 'rec' if previously not configured.

For instance:

If just the received audio should be recorded just the levels 'rcvL' and 'rcvR' must be in a different position than 0% (left position).
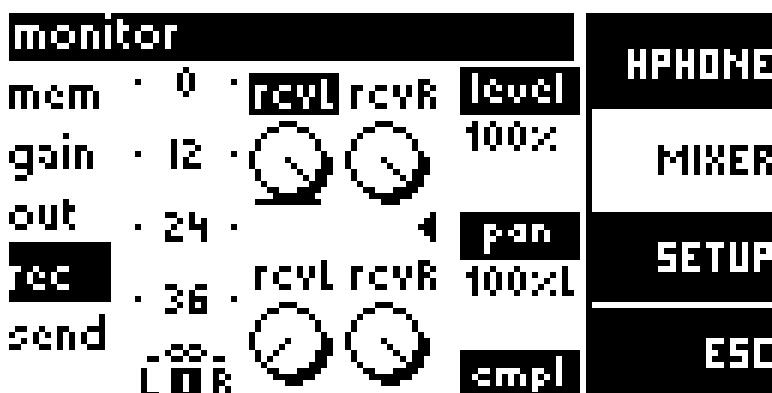
Note:

If feature 'recording during transmission' is often used a special mixer user profile can be saved.

b) Establish connection

Establishing connections can be done via <u>Codec/Connect</u>.

c) Start Recording

After transmission is established the following steps must be done:

- Select the storage media at menu item <u>Rec/Rec/Setup/Storage</u> (if multiple storage media are available)
- Start recording at menu item Rec/Rec by pressing F1 button

> ⚠️ *During Transmission only the quality 'Linear 16 bit' will be used for recording, regardless of the previous settings.*
>
> *It is possible to pre-define if the recording will be done in mono (only left channel on recorder input is used!) or stereo by selection the corresponding Quality Profile at <u>REC/REC/Setup/Quality</u>.*
>
> *Sampling rate of the recording will be automatically adjusted to match the sampling rate of the running transmission.*

d) Typical Applications

- Audio logging of transmitted or received audio

4.2   Playback during transmission

a) Set Mixer
To guarantee the right level ratio between live audio and playback audio the appropriate mixer settings should be done at menu item Monitor/Mixer at item 'send' if previously not configured.
For instance:
If just a previously recorded file should be played back the levels 'plyL' and 'plyR' should be in a different position than 0% (left position).
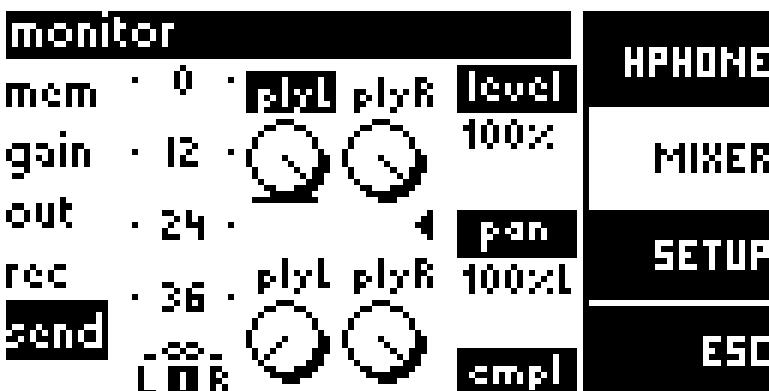
Note:
If feature 'playback during transmission' is used regularly a special mixer user profile may be saved.

b) Establish connection
Establishing connections can be done via Codec/Connect.

c) Start Playback
After transmission is established the following steps must be done:
- Select the right file at menu item Rec/Play/Tracks
- After selection of the right file start playback by pressing OK button twice

⚠️ During transmission only files with quality 'linear 16 bit' and the sampling rate matching the transmission's sampling rate can be used.

d) Typical Applications
- Nice background music for your live contribution
- Previously recorded material can be transmitted later
- Automatic playback of files in case of primary connection failure
  Note:
  This functionality can be provided by using MAYAH Event Action Programming.
  Please contact MAYAH Communications or MAYAH distributor for more information.

Part

V
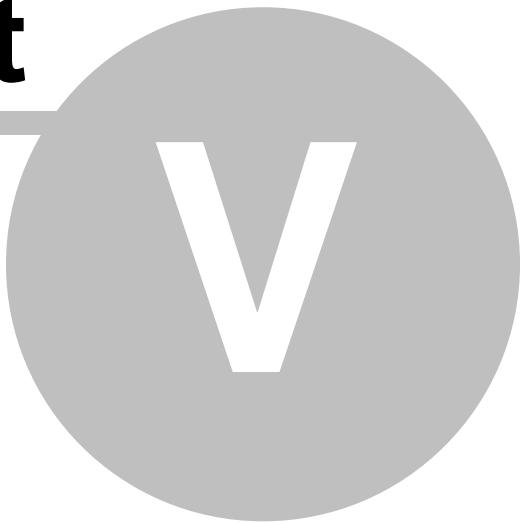
Technical specifications

5 Technical specifications

5.1 Models

Model	LCD Display	Keyboard	LED Level Meters	Slots for USB, SD, PC-Card	Mic In	Interfaces	Encoder	Decoder	Color
Standard IP models									
C1130	-	-	4	-	-	Ethernet	●	●	Black
C1131	●	●	4	-	-	Ethernet	●	●	Black
C1135	-	-	2	-	-	Ethernet	-	●	Black
Advanced IP models									
C1150	-	-	4	●	-	Ethernet	●	●	White
C1151	●	●	4	●	-	Ethernet	●	●	White
C1155	-	-	2	●	-	Ethernet	-	●	White
Standard ISDN models									
C1140	-	-	4	-	-	Ethernet, ISDN	●	●	Grey
C1141	●	●	4	-	-	Ethernet, ISDN	●	●	Grey
Advanced ISDN models									
C1160	-	-	4	●	●	Ethernet, ISDN	●	●	Grey
C1161	●	●	4	●	●	Ethernet, ISDN	●	●	Grey
ASI models									
C1180	-	-	4	-	-	Ethernet, ASI	●	●	Blue
C1181	●	●	4	-	-	Ethernet, ASI	●	●	Blue
IP models with second Ethernet card									
C1190	-	-	4	●	●	2* Ethernet	●	●	Orange
C1191	●	●	4	●	●	2* Ethernet	●	●	Orange

Legend:
●: implemented
 - : not implemented

5.2   General Technical Data

Audio Specification	
A/D, D/ converter	24 Bit
Frequency range	<= 10 Hz to 21.4 kHz (48 kHz, -3 dB)
Signal-to-Noise Ratio	>= 94 dB (linear PCM)
Distortion Factor	<= 0.05%
Input Impedance	> 25 kOhm
Output Impedance	< 100 Ohm
L/R phase differnce	< 0.5°
Coding formats (Algorithms)	
G.711	48 - 64 kbps, 8 kHz
G.722	48 - 64 kbps, 16 kHz
MPEG L2	16 - 384 kbps, 8 - 48 kHz
MPEG L3	8 - 320 kbps, 8 - 48 kHz
AAC (MPEG2)	8 - 320 kbps, 8 - 48 kHz
AAC (MPEG4)	8 - 320 kbps, 8 - 48 kHz
AAC (HE v2)	8 - 128 kbps, 24 - 48 kHz
Linear (PCM)	16, 20, 24 bit, 32 - 48 kHz
Std. APT-X	16 bit, 32 - 48 kHz
Enh. APT-X	16, 20, 24 bit, 32 - 48 kHz
File formats	
Linear (PCM), .wav	16 bit, 32- 48 kHz, Mono, Stereo
MPEG L2 "Musifile", .msf	64 - 256 kbps, 24 - 48 kHz, Mono, Joint Stereo, Stereo
MPEG L3, .mp3	64 - 192 kbps, 32 - 48 kHz, Mono, Joint Stereo, Stereo
AAC (raw), .aac	64 - 128 kbps, 48 kHz, Mono, Stereo
HE AACv2 (coding format loas, file format raw), .aac	24 - 64 kbps, 32 kHz, Stereo
Display	
LCD	Monochrome, 128x64 pixel
Audio Interfaces	
AES/EBU In/ Out / Sync In	1x DE9 female (9 pin D-Sub)
Line In / Mic in (depends on model)	2x XLR, mono, balanced, 48V phantom power (advanced models)
Line out	2x XLR, mono, balanced
Headphones out	1x 1/4" (6.3 mm) phone jack (TRS), stereo, unbalanced
IT interfaces	
Ethernet (IEEE 802.3)	10/100 Mbit/s, RJ45
USB	A-type
USB	B-type, mini USB
SD	card slot (advanced models)

PC card (PCMCIA)	card-slot (advanced models)
GPIO (4x Opto In / 4x Relay Out)	1x DE15 female (15 pin D-Sub)
IP Protocols	
RTP (default) / UDP	Audio transmission
SIP	Initiation and termination of audio transmission sessions
FTP	File transfer, update
HTTP	Web-Browser Remote Control
Telnet	Remote Control
SNMP	Remote Control / Monitoring
Power Supply	
12-14V DC	Hirose connector
PSU (= Power Supply Unit)	external, 100-240V AC, 50-60 Hz
Environmental Conditions	
Temperature for continuous operation	5 to 35°C (41 to 95° F)
Temperature for short term operation	5 to 45°C (41 to 113° F)
Weight	
Device	2,55 kg
Standard Power Supply	0,15 g
Dimensions	
Width	219 mm (8.62 inch)
Height	45 mm (1.77 inch)
Depth	280 mm (11.02 inch)

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